RELATIONSHIP BETWEEN ILLNESS PERCEPTION, ALEXITHYMIA, COPING STYLES AND PSYCHOLOGICAL DISTRESS IN ASTHMA PATIENTS

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Submitted By

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I hereby declare that the dissertation entitled "**RELATIONSHIP BETWEEN ILLNESS PERCEPTION, ALEXITHYMIA, COPING STYLES, AND PSYCHOLOGICAL DISTRESS IN ASTHMA PATIENTS**" submitted towards partial fulfillment of the requirements for the award of **M.PHIL in Clinical Psychology** degree to BFUHS is a compilation of original work carried out by me under the supervision of **Dr. Bholeshwar Prasad Mishra,** Professor & Head, Department of Clinical Psychology, **Dr. Akashdeep Singh,** Professor & Head, Department of Pulmonary Medicine and **Palak Upadhyay**, Assistant Professor, Department of Clinical Psychology. No part of this thesis has formed the basis for the award of any degree previously.

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Dedicated to my

Teachers,

Family

&

Friends

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-Tamanna Singh

ABBREVIATIONS

B-IPS	Brief Illness Perception Scale
DDF	Difficulty Describing Feelings
DIF	Difficulty Identifying Feelings
DOI	Duration of illness
EOT	Externally Oriented Thinking
GHQ-12	General health questionnaire
HADS	Hospital Anxiety Depression Scale
NFA	Near-fatal asthma
SPSS	Statistical Package for Social Sciences
SES	Socio-economic status
TAS-20	Toronto Alexithymia Scale
LM	Lower middle
UM	Upper middle
U	Upper
UL	Upper lower

ABSTRACT

Introduction: Asthma is a common heterogeneous chronic disease. Psychological distress may act as a trigger of asthmatic attack and thus can induce or exacerbate asthmatic symptoms. Asthma patients having poor illness perception will perceive their disease as threatening which can influence their ability to cope with the disease. Asthma patient with alexithymia can be associated with worse asthma control. Asthma can also have a negative impact on quality of life of patients but adequate coping strategies may mediate these negative effects.

Aim of Study: 1.To assess Illness perception in individuals diagnosed with asthma. 2. To assess and compare alexithymia in individuals diagnosed with Asthma and healthy individuals. 3. To assess and compare coping styles in individuals diagnosed with Asthma and healthy individuals. 4. To assess and compare psychological distress in individuals diagnosed with Asthma and healthy individuals. 5. To find the relationship between illness perception, alexithymia, coping styles and psychological distress in individuals diagnosed with asthma.

Materials & methods: Study will be conducted on 50 individual diagnosed and undergoing treatment for Asthma from both In-patient-department and Out-patient department at Dayanand Medical College and Hospital, Ludhiana and 50 healthy individuals (control group). Age ranging between 18-75 years, in both males and females, for both individual diagnosed with asthma and healthy individuals. Socio-demographic proforma will be filled and subjects will be evaluated on Illness Perception using Brief Illness Perception Questionnaire, Alexithymia using Toronto Alexithymia scale, coping style using Brief-Cope Inventory and Hospital Anxiety and Depression Scale, The General Health Questionnaire to assess any mental illness in the control group.

Results: Our results reveal that patients with asthma showed poor perception of their illness. Patient with asthma scored higher on alexithymia compared to control group. Asthma patients employed maladaptive coping strategies and have higher psychological distress compared to control.. Significant associations were found in duration of illness, region/locality, education, occupation, SES in patients with illness perception. The findings suggested that there is an association between illness perception, high alexithymia, maladaptive coping strategies and high level of psychological distress.

Conclusions: On the basis of the above-mentioned points, we conclude that we have successfully studied the relationship between poor illness perception, high alexithymia, maladaptive coping strategies and psychological distress in asthma patients.

Keywords: Asthma, Alexithymia, Illness Perception, psychological distress, coping styles.

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INTRODUCTION

Asthma is defined as a chronic inflammatory disease of the airways. The chronic inflammation is associated with airway hyper responsiveness (an exaggerated airway narrowing response to triggers, such as allergens and exercise), that leads to recurrent symptoms such as wheezing, dyspnea (shortness of breath), chest tightness and coughing. [1] These episodes are usually associated with widespread, airflow obstruction within the lung which are often reversible either spontaneously or with treatment. [2]

The term asthma comes from the Greek word *aazein*, meaning “to pant, or breathe with the mouth open.” Asthma affected an estimated 262 million people in 2019 and caused 461000 deaths. [3]

The causes for asthma can be genetic, environmental, lifestyle factors or mixture of these factors. Asthma is a non-communicable disease (NCD), can affect population from any age group or gender, can affect both children (from kindergarten and school) and adults through work to retirement. Asthma is not a curable disease, but it is preventable. Poor asthma control contributes to unnecessary morbidity, limitations to daily activities and impairments in overall quality of life. [4] Strategies can be affectively applied for preventing condition, good management with inhaled medications can control worsening of asthma symptoms, avoiding triggers can help to reduce asthma symptoms and enable people with asthma to enjoy a normal, active life (WHO, 2021).

Pathophysiology of asthma:

Factors contribute to the development of airway narrowing in asthma [5] clinical respiratory medicine 2

1. Bronchoconstriction: It is an abnormal contraction of airway smooth muscle that was due to an intrinsic abnormality in the airway myocytes. Nervous system dysfunction with cholinergic and/or tachykinin excess also was an important

pathogenic process. There is decreases in response to β-agonist and increases in response to α-agonist activity due to autonomic dysfunction.

2. Airway Edema is due to increased micro-vascular leakage occurring in response to inflammatory mediators.
3. Airway Remodeling: In asthma patients an airflow obstruction was seen despite aggressive anti-inflammatory therapies, including regimens of inhaled corticosteroids and systemic corticosteroids. [6]
4. Mucus Metaplasia: Mucus hypersecretion, epithelial hypertrophy, mucus metaplasia, and airway obstruction due to bronchial mucus plugging are features of chronic asthma and which are contributing to the airway obstruction in asthma.
5. Airway Hyper-responsiveness: It has been related to increased volume or contractility of airway smooth muscle cells, excessive airway contraction due to inflammatory changes, and exaggerated bronchoconstriction occurring in response to sensory stimuli in sensory nerves sensitized by excessive inflammation.

Diagnosis:

History: Asthma symptoms typically reflect variability in airflow obstruction. In asthma patients exaggerated diurnal variation are seen, symptoms occurs upon exposure to allergens or irritants, that worsen at night, [7] maximally at 4 AM, which is caused by physiologic bronchomotor tone. Airway hyper-responsiveness can be caused due multitude of possible trigger factors, symptoms occurring after exercise, after exposure to allergens, and in response to inhaled noxious fumes such as cigarette smoke. On the basis of frequency of daily symptoms, exercise limitation, nocturnal wakening, and exacerbation frequency disease severity can be assessed.

Factors Associated With Increased Probability of Asthma: Cough, breathlessness, wheeze, chest tightness, symptoms worse at night and in

the early morning, symptoms occurring in response to exercise, allergen exposure, and cold air ; symptoms developing after taking aspirin or beta blockers, history of atopic disorder, family history of asthma and/or atopic disorder, variable wheeze heard on auscultation of the chest.

Factors Associated With Lower Probability of Asthma Prominent: Dizziness, light-headedness, peripheral tingling, isolated cough, repeatedly normal physical examination of chest when symptomatic, voice disturbance, symptoms with colds only Chronic productive cough, significant smoking history (i.e., more than 20 pack-years) and cardiac disease.

CLINICAL EXAMINATION

Physical Examination: Wheezing on auscultation is the most common abnormal physical finding which confirms the presence of airflow limitation. It is usually caused by turbulent airflow through narrowed airways. Wheezing may be heard throughout the chest. During an acute exacerbation of disease, physical signs of increased ventilation may be observed with the use of accessory muscles of respiration and chest signs of hyperinflation.

Laboratory Investigations for diagnosing asthma: [8] Fishman

1. Spirometry: It measures the expiratory volume and flow of air using forced maneuvers from full lung inflation (Fishman). Patients with asthma typically show a reduced forced expiratory flow in 1 second (FEV1), reduced PEF, preserved forced vital capacity (FVC), and an FEV1/FVC ratio of 0.7 or greater, but with worsening disease, FEV1 less than 60% predicted the FEV1/FVC ratio is more usually <0.7. [9] Airflow obstruction is defined as an FEV1/FVC ratio of less than 0.7. Spirometry should be repeated, particularly when patients are symptomatic. Sometimes due to variability of asthma symptoms, asthma patients do not exhibit reversible airway obstruction at every visit. [10]

2. Assessment of the bronchodilator response: After a short-acting bronchodilator (bronchodilator responsiveness) or after a therapeutic trial of corticosteroid (steroid responsiveness) a change is measured in FEV1 or PEF from baseline to check improvement.
3. Assessment of airway responsiveness: Measuring the fall in FEV1 in response to broncho-constrictor stimuli, including pharmacologic agents (methacholine or histamine challenge tests), exercise, and allergen challenge.
4. Asthma Control Questionnaire: Response to 7 questions, 5 relating to symptoms, 1 rescue treatment use and 1 FEV1 Response usually assessed over the preceding week Shortened, five-question symptom only questionnaire is just as valid. [11]
5. A computed tomography chest scan, imaging of the upper airway, esophageal pH monitoring are used. Hyperinflation, prominent hilar vessels, and bronchial wall thickening can be seen in the investigations.
6. Objective assessment of atopy with skin prick testing or measurement of IgE and allergen-specific IgE may help support a diagnosis of atopic asthma and will provide an important guide to allergen avoidance strategies, anti-IgE treatment, and antifungal therapy.
7. A raised blood eosinophil count commonly is seen in asthma; in the absence of an obvious systemic explanation (e.g., eczema), it is a specific but not sensitive marker of eosinophilic airway inflammation.

Asthma Risk factors: The asthma risk factors can be divided into genetic and environment factors, such as allergens, nutritional factors, perinatal factors, and tobacco smoke (active and secondhand smoking). Bothdirect or indirect triggering factors can worsen asthma symptoms. Direct factors includes infections, nonspecific irritants such as tobacco smoke, outdoor air pollution, industrial spills, bonfire smoke, and meteorologic changes

(low temperatures, high humidity). Indirect factors includes exercise, extremes of emotion, food allergens, medications, menstruation, gastroesophageal reflux disease (GERD), and pregnancy.

Genetics in asthma: Family history of asthma is a risk factor for developing asthma. Asthma runs in families, offsprings and children of asthmatic parents are at increased risk of asthma. The recurrence risk of asthma in children with one affected parent is around 25%, whereas the risk if both parents are affected is around 50%. [12] Atopy (the genetic predisposition to develop IgE antibodies against specific allergens), airway hyper-responsiveness, obesity, and gender components of asthma are heritable. The relative risk for asthma in a first-degree relative of the patient is between 2.5% and 6%; in monozygotic twins, the risk is 60% and in dizygotic twins, 25%.

Environmental factors in asthma:

1.1 Nutritional Factors: Asthma is associated with changes in the nutritional habits (processed foods, low antioxidant intake, high n-6 polyunsaturated fatty acids). Infants who are breast fed during early childhood are less likely to develop wheezing illness than are intact cow's milk– or soy protein–fed infants.

1.2 Lung Function: Decreased airway caliber in infancy is a risk factor for transient wheezing, perhaps related to prenatal and postnatal exposure to environment. Children with wheezing (and diagnosed asthma) persisting to adulthood have a fixed decrement in lung function as early as the age of 7 or 9 years.

1.3 Socioeconomic Status: Children of parents with lower socioeconomic status have greater morbidity for asthma. Children in chronic low-income families, have 60% higher risk of asthma than children with high income family. [13] High levels of stress in caregivers of children and who have difficulties parenting are at greatest risk for development of asthma.

1.4 Antibiotics and Infections: The use of antibiotics, viral infections of the lower respiratory tract, viruses such as RSV and rhinovirus contribute to early childhood wheezing and asthma. [14] Bacterial infection with species of Mycoplasma and Chlamydia are also associated with exacerbations of asthma.

1.5 Allergens: Allergens are well-known precipitants of asthma exacerbations and increased morbidity. Some risk factor for developing asthma includes, the exposure to allergens; outdoor (pollens, fungi, molds, yeasts, trees, grass, and weed pollen) or indoor (house dust mite, animal proteins [particularly dog and cat dander], cockroaches, and fungi). Indoor allergen sources include animals (cats, dogs, rodents), insects (mites, cockroaches), and fungi. [15, 16] The role of cockroach allergy and exposure to cockroach allergen in causing morbidity in patients with asthma. In asthma patients increased asthma symptoms were also seen at times of pollination. [17]

1.6 Meteorologic Changes: Low temperatures, high humidity, cold, and dry air are common asthma triggers. Heat and sunlight combine with pollutants to create ground-level ozone, which can be a strong asthma trigger. Wet weather (which encourages the growth of mold) and windy weather (which blows pollen and mold in the air) also are associated with worsening of symptoms.

1.7 Perinatal Factors: Exposure to maternal smoking, young maternal age, diet during pregnancy, prematurity, mode of delivery, and in utero exposure to antibiotics trigger will increase risk for development of asthma. Prematurity can increased risk for the development of asthma, infants born at less than 37 weeks' gestation are at greater risk for developing asthma than term infants. [18] Low birth weight has been associated with asthma risk. [19] Some of the predictors of wheezing in the early years of child can be the relative roles of cockroach, birth weight, acute lower respiratory

illness, and maternal smoking. Maternal diet during pregnancy has an effect on the development of asthma and allergies. [20] Maternal cigarette smoking is a major risk factor for the development of asthma in the first year of life. [21]

1.8 Occupational Exposure: Workplace sensitization is responsible for 1 in 10 cases of asthma among adults of working age. High risk occupations for the development of asthma include farming and agricultural work, painting, plastic manufacturing, and cleaning.

1.9 Exercise-Induced Asthma: Asthma patients have worsening of symptoms on or after physical exercise, it is not the cause of, but non-immunologic triggers that produce symptoms in patients who already have the disease due to drying of the airway mucosa as a result of hyperventilation.

1.10 Obesity: It is a major risk factor for asthma where abdominal obesity (waist circumference) and general obesity (BMI) both show a strong correlation with the risk of new-onset asthma. [22]

1.11 Emotional Extremes: Laughing, weeping, anger, and fear all can provoke hyperventilation and unleash airway hyper reactivity, with consequent development of a broncho-constrictive crisis.

1.12 Food Allergens: Eggs, peanuts, milk, soybean, shellfish, fish, wheat, chocolate, nuts, or orange, among others, might induce asthma in sensitized patients.

1.13 Gastroesophageal Reflux Disease (GERD): The prevalence of GERD certainly appears to be higher in asthma patients than in the general population. [23] Between 50% and 80% of asthmatic patients reported classic GERD symptoms such as heartburn. GERD can worsen asthma by the tracheobronchial aspiration of gastric acid contents, resulting in airway inflammation. Treating GERD in asthmatic patients reduces asthma treatment needs and decreases asthma symptoms.

ILLNESS PERCEPTION

Perception of illness is a patient's cognitive appraisal and personal understanding of a medical condition and its potential consequences. [25] Illness perceptions are cognitive models that people have about symptoms, illnesses, medical conditions and health threats. It focuses on how an individual experiences and mentally frames living with a disease [26] which include both positive and negative illness beliefs that can influence the ability to cope with the disease and to perceive it as manageable or threatening. [27]

Illness perceptions have been found to be important determinants of medication adherence, disease control and Quality of Life in adults with asthma. Patients construct these perceptions about their illness to make sense of their symptoms and medical conditions and to cope with uncertainty.

The major components of illness perception include how the illness was caused, how long it will last, what the consequences of the illness are for the patient's life. It also includes the symptoms of the illness and how the condition is controlled or cured. The way patients perceive their illness is a key factor in the type of psychological reaction they have to the illness, their subsequent behaviour and attitudes towards illness. [28]

"Common Sense Model of illness perception" [29]

It comprises of patient's perceptions of the causes, course, consequences, timeline, and identity of their illness. Patients forms these views on the basis of the information they get from their physicians, what patients learn from informal sources such as popular publications, television programs, and fellow patients. How one perceives their illness determine one's coping behavior, self-management behavior, adherence, and outcomes (such as use of health care services, days off work, school absenteeism, and quality of life). [30]

On the basis of above model illness perceptions in asthma are categorized into five dimensions:

1. Causes dimension include perceptions that asthma is caused by “stress,” “heredity,” or “the weather.”
2. Identity dimension comprise the complaints, signs, and symptoms that patients attribute to their asthma.
3. A cure/control illness perception could be the view that “There is nothing that can help my condition.”
4. Consequences dimension, of illness perception, such as “My asthma is not a serious condition”.
5. Timeline perceptions are particularly relevant for asthma patients in that patients who agree with statements such as “My illness will last a short time” or “My illness will improve in time” have been found to manifest poor outcomes.

ALEXITHYMIA

Alexithymia is a psychological trait characterized by a reduction in the tendency to think about emotions and to engage in fantasizing, as well as a deficit in the ability to consciously experience, describe, and identify emotions. [31] It is associated with a tendency to suffer from a higher frequency and intensity of both physical and psychological symptoms. [32] It is classically considered to be an appraisal problem, in other words, a problem in the cognitive interpretation of emotional arousal (Taylor et al. 1991; Sifneos, 1973).

The word alexithymia comes from Greek word meaning *a* = *lack, lexis* = *word and thymos* = emotion, mood, or feeling) i.e., lack of words for emotions and feelings. It was coined by Sifneos in 1972 and refers to individuals who have difficulty describing their emotional state. It is a multifaceted personality construct that has been associated with various medical and psychiatric disorders. [33]

Alexithymic individuals show a striking difficulty in recognizing and describing their own feelings, and they have difficulty discriminating between emotional states and bodily sensations. [34]

Alexithymia constitutes of the following: 1) difficulty identifying and describing subjective feelings; 2) difficulty distinguishing between feelings and the bodily sensations of emotional arousal; 3) constricted imaginal capacities, as evidenced by a paucity of fantasies; and 4) an externally oriented cognitive style. [35]

The alexithymia concept stems from the field of the psychology of emotions and psychosomatics. Earlier it was seen amongst the patients with psychosomatic diseases and a large proportion of patients with psychosomatic complaints showed difficulties in emotional self-regulation.

Later it was also observed in medical disorders [36] such as coronary heart disease, [37] hypertension, [38] chronic pain disorder, [39] gastrointestinal disorder. [40] Alexithymia has repeatedly been shown to be related to mental disorders, such as depression,[41] panic disorder and phobia,[43] eating disorders, [42] and substance misuse, [43] anxiety, [44] and obsessive compulsive disorder. [45]

In the past, different therapists and researchers have given different names to people with alexithymia as these people have problems in dealing, describing and expressing their emotions. Such individuals were labelled as —immature or infantile personalities, normopaths, —normotics, —antianalysands. [46] A French psychoanalyst introduced the word —pensée opératoire which means that alexithymia individuals have externally oriented cognitive style and also, they do not possess drive related fantasies. [47]

How Is Alexithymia Caused:

Biogenic alexithymia results from physical abnormalities in brain structure. These abnormalities may be caused by brain injury (e.g. from a car accident), by lack of oxygen to the brain during birth, or by the introduction of toxins. The abnormalities may also be genetic or it could be due to improper development of the brain from birth or during childhood.

Psychogenic alexithymia is caused variously by emotional trauma, developmental delay, or cultural and parental conditioning. Emotional

trauma can be generated by experiences such as sexual abuse, neglect, witnessing or experiencing violence, being subject to physical pain associated with injuries, or chronic diseases such as cancer, heart disease, diabetes, and rheumatoid arthritis.

Alexithymia is classified into primary, secondary [48] and organic alexithymia.

Primary alexithymia: Is a dispositional trait which refers to an enduring condition which seems to alter little over time or with changing circumstances, not dependent on any temporary environmental or psychological situation. Its persistence is due to neurological defects or entrenched defences which may radically alter normal neuronal functions.

Primary alexithymia may arise from a psychic trauma which took place in the childhood. Thus, primary alexithymia is related to a more or less stable personality trait which generally molds during childhood and early years of adulthood. Hence, primary alexithymia is formation occurs in one‘s nature.

Secondary alexithymia does not arise during childhood, but it is a cumulative result of events which occur later stages in life. It has its genesis in reaction to emotional trauma, is a state-dependent form of alexithymia, which disappears after the evoking stressful situation has changed. Krystal proposed that secondary alexithymia might also arise in response to severe emotional trauma, as a way of avoiding painful affect (Krystal 1982). [49] These events may have psychological significance or medical-surgical effects (illnesses or disease). Therefore, secondary alexithymia considered to have both psychological as well as somatic mechanisms.

The term organic alexithymia defined as a condition in which alexithymia occur due to organic damage to brain structures which are responsible for emotional processing. Organic alexithymia is highly resistant to treatment, it is not related with a specific pre-morbid personality but with cognitive impairment. [50]

Bermond [51] distinguishes two main forms of alexithymia Types I and II/ Affective vs Cognitive Alexithymia

Type I alexithymia is characterized by the absence of emotional experience and, consequently, by the absence of the cognition accompanying the emotion. Type I alexithymia is also called “affective” alexithymia. The affective dimension refers to the level of subjective emotional experience and mainly consists of the degree to which someone is emotionally aroused by emotion-inducing events.

Type II alexithymia is characterized by a selective deficit in emotional cognition. Type II alexithymia is also called “cognitive” alexithymia (Bagby et al. 2009). The cognitive dimension refers to the processing of emotions at a cognitive level and mainly consists of the degree of which an individual is able to identify, analyze and describe feelings.

Somatosensory Amplification Hypothesis in alexithymia:

It has been hypothesized that alexithymic individual has limited ability to process emotions cognitively which leads to focusing on the somatic sensations accompanying emotional arousal. This is called the Somatosensory Amplification Hypothesis in alexithymia, [52] which postulate that alexithymic individuals has a tendency to rely on or to amplify physical symptoms as they are hyposensitive to physical sensations. Thus might have tendency to develop hypochondriasis and somatization disorders, [53] as well as their alleged proneness to regulate tension through compulsive behaviours such as binge eating (Nowakowski et al. 2013), psychoactive substance abuse, [54] or anorexia nervosa. [55]

COPING

During a stressful situation, the individuals varying ways of dealing with stressors are termed 'coping styles,' which are a set of relatively stable traits that determine the individual's behavior in response to stress. These are consistent over time and across situations. [56] The word “cope” is derived from the Latin word “colpus” meaning to alter.

Coping is the process of executing a response to a stressor, where stress is viewed as the experience of encountering relevant difficulties in one‘s goal-related efforts [57] and exists when an individual perceives the achievement of a desired goal as impossible or detects possible future punishments. [58] Thus, coping has been described as an individual‘s attempt to use cognitive and behavioural strategies to manage and regulate pressures, demands, and emotions in response to stress. [59]

Coping is defined as a combination of constantly changing behavioral and/or cognitive efforts to manage situational demands which are the result of a person’s confrontation and evaluation of a stressor [60] which are undertaken by an individual in order to deal with demands which are especially challenging and are probably exceeding individual capacities and/or resources. [61]

Lazarus and Folkman have defined coping as "the process of managing demands (external or internal) that are appraised as taxing or exceeding the resources of the person" i.e. a special category of adaptation elicited in normal individuals by unusually taxing circumstances. [62] The most influential model of psychological stress response is the one proposed by Lazarus and Folkman. [63]

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The process of coping involves three main elements: a) the source of the stress (the event or stressor); b) cognitive appraisal (which includes evaluation of the event as being irrelevant, threatening or positive, and

simultaneous assessment of available coping resources within the individuals and their environment); and c) coping mechanisms.

Coping behaviors and strategies have been traditionally dichotomized into categories, such as problem- versus emotion-focused, functional versus dysfunctional, approach versus avoidance, engagement versus disengagement, and primary versus secondary control group coping. Folkman and Moskowitz [64] identified meaning focused coping as the third function of coping.

Lazarus and Folkman‘s method of categorizing coping behaviours is the most famous and used one to study coping. [65]

Folkman and Lazarus split the coping strategies into four groups, namely problem-focused, emotion-focused, support-seeking, and meaning-making coping. [66, 67]

1.1 Problem-focused coping, which involves addressing the problem causing distress and actions taken to eliminate the stress factor or reduce its impact like making a plan of action or concentrating on the next step. It is based on one’s capability to think and alter the environmental event or situation. Examples of this style include active coping, planning, restraint coping, and suppression of competing activities. The three problem-focused coping strategies identified by Folkman and Lazarus are: taking control, information seeking, and evaluating the pros and cons.

1.2 Emotion-focused coping, which aims to reduce the negative emotions associated with the problem and actions aimed to prevent, minimize, or reduce the emotional anguish caused by the stressful situation like engaging in distracting activities, using alcohol or drugs, or seeking emotional support, also includes positive reframing, acceptance, turning to religion, and humor.

1.3 Meaning-focused, in which an individual uses cognitive strategies to derive and manage the meaning of the situation

1.4 Social coping (support-seeking) in which an individual reduces stress by seeking emotional or instrumental support from their community. [68]

Weiten, types of coping strategies: appraisal-focused (adaptive cognitive), problem-focused (adaptive behavioral), emotion-focused.

1.1 Appraisal-focused (adaptive cognitive) strategies occur when the person modifies the way they think. Individuals who use appraisal coping strategies purposely alter their perspective on their situation in order to have a more positive outlook on their situation. People may alter the way they think about a problem by altering their goals and values, such as by seeing the humor in a situation.

1.2 Problem focused/ Adaptive behavioural coping strategies: People using problem-focused strategies try to deal with the cause of their problem by finding out information on the problem and learning new skills to manage the problem. It is aimed at changing or eliminating the source of the stress.

1.3 Emotion-focused coping strategies: Emotion-focused coping "is oriented toward managing the emotions that accompany the perception of stress" It involves releasing pent-up emotions, distracting oneself managing hostile feelings, meditating, mindfulness practices' using systematic relaxation procedures. Emotion-focused coping is a mechanism to alleviate distress by minimizing, reducing, or preventing, the emotional components of a stressor.

Several scales have been designed in order to measure coping strategies. Carver (1997) presented an abbreviated Version of COPE, the Brief-COPE, which has been widely used in health contexts. [69] This instrument has 14 subscales composed of 2 items each: (a) acceptance (b) emotional support ;(c) humor; (d) positive reframing; (e) religion; (f) active coping; (g) instrumental support; (h) planning; (i) behavioral disengagement; (j)

denial; (k) self-distraction; (l) selfblaming; (m) substance use; (n) venting is saying things to let unpleasant feelings escape/expressing negative feelings.

Descriptions of the subscales: (a) acceptance is accepting the reality that has happened/learning to live with it; (b) emotional support is obtaining emotional support/comfort and understanding; (c) humor is making jokes about it/making fun on the situation; (d) positive reframing is trying to see the situation from a different light, make it seem more positive/look for something good in it; (e) religion is finding comfort in religious or spiritual beliefs/praying or meditating; (f) active coping is concentrating the efforts on doing something about the situation/taking action to try to make it better; (g) instrumental support is getting help and advice from other people/trying to get advice or help from others about what to do; (h) planning is trying to come up with a strategy about what to do/thinking hard about what steps to take; (i) behavioral disengagement is giving up trying to deal with it/the attempt to cope; (j) denial is saying to myself —this is not reall‖/refusing to believe that it has happened; (k) self-distraction is turning to work or other activities to take my mind off things/doing something to think about it less; (l) self-blaming is criticizing myself/blaming myself for things that happened; (m) substance use is using alcohol or other drugs to feel better/to help me get through it; (n) venting is saying things to let unpleasant feelings escape/expressing negative feelings.

Carver, categorizes the strategies of acceptance, emotional social support, humor, positive reframing, and religion as emotion focused. On the other hand, active coping, instrumental support, and planning are considered as problem-focused strategies. Finally, behavioral disengagement, denial, self-distraction, self-blaming, and substance use and venting are considered as dysfunctional coping strategies.

Psychological distress

Psychological distress is largely defined as a state of emotional suffering characterized by symptoms of depression (e.g., lost interest; sadness; hopelessness) and anxiety (e.g., restlessness; feeling tense). [70] These symptoms may be tied in with somatic symptoms (e.g., insomnia; headaches; lack of energy) that are likely to vary across cultures. [71]

'Psychological distress refers to the general concept of maladaptive psychological functioning in the face of stressful life events'. [72]

Decker 1997, [73] conceptualised psychological distress as lack of enthusiasm, problems with sleep (trouble falling asleep or staying asleep), feeling downhearted or blue, feeling hopeless about the future, feeling emotional (crying easily or feeling like crying) and feeling bored or a passing interest in things and thoughts of suicide. [74] Psychological distress is widely used as an indicator of the mental health of the population in public health.

Theoretical perspectives of psychological distress

1. Medical Model

The medical model is a prevailing or dominant view of pathology in the world. [75] Psychological distress is regarded as a disease in the same category as any other physical illness. Psychological distress is some form of neurological defect responsible for the disordered thinking and behaviour and requires medical treatment and care. [76]

2. Interpersonal Theory

Interpersonal theories attribute psychological difficulties to dysfunctional patterns of interaction. This theory views that we are social beings, and much of what we are is a product of our relationships with others. Psychological distress is identified when examining the distressed person's different patterns of interpersonal relationships. It focuses on alleviating problems existing within relationships and on helping people achieve more satisfactory relationships through learning of new interpersonal skills.

3. Psychodynamic theory. Psychoanalytic models looks at pathology (psychological distress) from an intrapsychic view, puts emphasize the role of unconscious processes and defence mechanisms in the determination of both normal and abnormal behaviour. Early childhood experiences also play a role in later personality adjustment. Therefore, psychological distress in a person's life may be described as his attempt to cope with present difficulties using past childhood defence mechanisms and intrapsychic conflicts.

4. Cognitive Theory. According to the cognitive model, the core process in psychological distress is a negatively biased cognition. [77] As distressed patients typically have a negative view of themselves, their environment and the future. Thus, emotional difficulties occurs due to the way one see events, give meaning and gets exaggerated beyond the available evidence which tend to have a negative influence on feelings and behaviour in a vicious cycle.

Clinical correlates in medical illnesses

The scope and impact of depression and anxiety disorders worldwide are overwhelming. The watershed Global Burden of Disease (GBD) study found that major depression ranked fourth among all medical illnesses in terms of its disabling impact on the world population. [78, 79] Depression and anxiety disorders are among the most common illnesses in the community and in primary care. Patients with depression often have features of anxiety disorders, and those with anxiety disorders commonly also have depression. Both disorders may occur together, meeting criteria for both. It is important to identify and treat both illnesses, as they are associated with significant morbidity and mortality. Patients who have depression and anxiety comorbidity have higher severity of illness, higher chronicity, and significantly greater impairment in work functioning, psychosocial functioning, and quality of life than patients not suffering from comorbidity. [80, 81, 82, 83] Comorbid depression and anxiety can increase impairment and health care use, compared with either disorder alone.

Their co-occurrence is often associated with a poor prognosis and significant detrimental impact on functioning in the workplace.

AIMS AND OBJECTIVES

- To assess Illness Perception in individuals diagnosed with asthma.
- To assess and compare alexithymia in individuals diagnosed with Asthma and healthy individuals.
- To assess and compare coping styles in individuals diagnosed with Asthma and healthy individuals.
- To assess and compare psychological distress in individuals diagnosed with Asthma and healthy individuals.
- To find the relationship between illness perception, alexithymia, coping styles and psychological distress in individuals diagnosed with asthma.

Study by Williams MV et al (1998) [84] determined the relationship of literacy to asthma knowledge among patients with asthma conducted on 273 patients. The results shows that only 27% of patients read at the high-school level; 33% read at the seventh- to eighth-grade level, 27% at the fourth- to sixth-grade level, and 13% at or below the third-grade level. Only 31% of all patients reading at third-grade level or less, compared with 90% of those reading at the high-school level, knew that they need to see their physician even when not having an asthma attack. The study concluded that inadequate literacy was strongly correlated with poorer knowledge of asthma and improper metered-dose inhaler (MDI) technique use.

A study held by König P et al (1999) [85] shows that asthma duration is associated with lower levels of several lung functions (P <.001), as well as higher levels of symptoms (symptom score: r = 0.147, P <. 001) and greater use of as-needed albuterol, which are all measures of asthma severity.

A study held by Kozyrskyj AL et al (2004) [86] determined urban-rural differences in asthma prevalence. The findings shows that 8% of children in northern rural areas, 10% in southern rural areas and 14% in urban areas had asthma. Early life exposures to tobacco smoke (51%), cats (26%), dogs (42%) and were highest, and family history of atopy was lowest (34%) among children in the rural north. Asthma was significantly more likely in children with atopic family history (OR=3.61) and children exposed to tobacco smoke and cats. Despite increased exposure to environmental risk factors, northern rural children were 40% less likely and those in southern rural areas were 20% less likely to have asthma than urban children.

Kaur S et al (2008) [87] conducted a study on 398 patients with asthma which was undertaken to find out the demographic and environmental characteristics of asthma patients. Study finds that mean age of the subjects was 35.53 yrs±12.19 with the range between 18-60 years. There

were 41.9% males and 58.1% females and ¼ of the females were housewives. Majority 75% of patients were residing in the urban area. Family history of asthma was observed in 40% patients. 20% had exposure to passive smoking at home and/or at place of work. Some of the subjects (15.3%) had pets in their homes with dog as the commonest one. The study shows that there was not statistically significant difference in asthma symptoms due to these factors but asthma was definitely aggravated by exposure to the above triggers.

A study by Talreja N et al (2011) [88] was conducted to compare short- and long-term asthma control in elderly (>65 years old) and young adult (18 – 64 years old). A sample of 2,557 young and 398 elderly asthmatic patients was taken. It was found that elderly asthmatic patients have worse short- and long-term asthma control compared with the young adult population as they were less educated about asthma attack interventions and asthma action plans.

A study held by Kynyk JA et al (2011) [89] assesses the sex-related differences in asthma epidemiology and disease expression. The findings of the study shows an increased incidence of asthma in women and women are more likely to be diagnosed with asthma and suffer greater morbidity than men. Asthmatic women have a poorer quality of life and increased utilization of healthcare compared to their male counterparts despite similar medical treatment and baseline pulmonary function.

Study by Lawson JA et al 2011 [90] shows that asthma prevalence was lowest in rural regions (metro =17.7%, non-metro-adjacent = 15.6%, rural = 14.8%). A lower risk of asthma was associated with rural region and living in non-metro adjacent regions. Thus, rural geographic status is related to lower asthma prevalence.

Dursun AB et al (2014) [91] studies the effect of gender on asthma control in adult asthmatics. Study was conducted on 242 patients older than 18 years of age. In this study, 77.3% of the patients were female. The study finds mean age and duration of asthma were 39.0 + 0.7 and 6.6 + 0.4

years, respectively. 55.8% of patients were graduated from middle school, 22.7% from high school, and 14% from university. The asthma severity was mild in 45.5%, moderate in 40.9%, and severe in 13.6% of the patients. Complete control in 67.8% was found, 17.8% had partial control and uncontrolled asthma in 14.5% based on ACT scores. Comparing the results of males with females having asthma, there was no statistically significant difference between the two genders. Thus, it was concluded that there was no effect of gender on asthma control.

A cross sectional study Agrawal S et al (2014) [92] conducted on 64, 725 men aged 15–54 years and 52,994 women aged 15–49 years, aimed to find occupation with an increased prevalence of asthma among adult men and women in India. The study finds that the prevalence of asthma among the working population was 1.9%. The highest odds ratios for asthma were found among men in the plant and machine operators and assemblers, mining, construction, manufacturing and transport, these occupations were at the highest risk of asthma. Among women none of the occupation categories was found significant for asthma risk. The study also shows that men and women employed in high-risk occupations were not at a higher risk of asthma when compared with those in low risk occupations.

A cross-sectional study by Zein JG et al (2015) [93] shows that severe asthma occurs more often in older adult patients. The findings revealed that an inflection point at age 45 for risk of severe asthma. Asthma duration also increased the probability of severe asthma but had less effect than aging. Asthma patients older than 45 maintained the greater probability of severe asthma and after 45, the age-related risk of severe asthma continued to increase in men, but not in women.

Kumar P et al (2017) [94] shows that the prevalence rate of reporting asthma was higher in poorer states compared to richer states. The odds of reporting asthma was higher for younger and older ages, individual with fewer years of schooling for individual with zero years of schooling

compared to those with 11 or more years of schooling, individual from lower economic status, individual living in household using unclean fuels and smokers.

A cross sectional study by Mood N et al (2021) [95] conducted on 100 patients, with age ranged from 15 to 60 years aimed to asses various risk factors associated with bronchial asthma. The study finds that the mean age of asthma patients is 38.96±10.564 and the incidence of asthma is equal in both males and females. Bronchial asthma was found to be more common in urban population and more in the illiterate group.

Illness perception

Jessop DC 2003 [96] shows that age, duration of asthma and gender significantly affect treatment adherence. Age, gender, illness label, cure-control and external causes made significant prediction of current adherence. Results shows that participants who were older, female, believed that they had asthma and thought that their asthma could be cured and/or controlled were more likely to adhere, while those who believed that their asthma had been caused by external factors were less likely to adhere. Patients who believed that their asthma would last a long time were more likely to intend to adhere. Similarly, individuals who do not think that their asthma will last a long time may be less likely to recognise the value of taking long-term medication. Likewise, individuals who do not believe that their asthma is amenable to cure or control may be less adherent because, presumably, they do not believe that the medication can help control their asthma. The reported associations between representations of asthma and adherence are perhaps intuitively understandable. It is easy to appreciate why individuals who are not sure that they have asthma might be less convinced of the need to take asthma-specific medication. Thus, Illness perception impacts treatment adherence in asthma patients.

The study conducted by Kaptein AA, et al 2008 [97] aims to assess illness perceptions and their relationships with various aspects of outcome in

asthma patients. The study includes patients of all ages including (young children, adolescents and their parents, adults). Patients who reported low perceptions of control, who held an episodic belief about asthma (timeline), and who perceived their asthma as having few adverse consequences were less adherent. The findings of the study reveals that patients are liable to adopt an episodic or acute illness model of asthma (rather than more accurately considering asthma to be a chronic condition), which serves to discourage patients from properly adhering to anti-inflammatory medication, from long-term monitoring of pulmonary function and from adequate self-management behavior. The study shows that many asthma patients hold inaccurate perceptions of medication (the belief that corticosteroids are dangerous to health and so should be avoided) that are important to change as this targets both illness and treatment perceptions. Thus, the study found there is a meaningful associations between how asthma patients' views their illness and its treatment and non-adherence.

A study conducted by Olszanecka-Glinianowicz M et al (2014) [98] shows that the illness perception, younger age, disease duration and severity are predictors of adherence to treatment among patients with asthma and COPD. In the asthma group the non-adherence rate was the highest among subjects with disease duration over 5 years (43.9%). The illness perception, younger age, disease duration and severity are predictors of adherence to treatment.

A study conducted by Achstetter, et al 2016 [99] investigates whether illness representations predict changes in asthma control. The study was conducted on 113 patients with asthma. Illness perceptions and asthma control were assessed, IPQ-R—short version and asthma control test (ACT) were used. For statistical analysis t-test, correlation, chi square test, multiple regression were used. The results shows that llness perception subscales such as consequences ($\beta 2 = -0.35$, $p < 0.001$), personal control ($\beta 2 = -0.41$, $p < 0.001$), coherence ($\beta 2 = -0.23$, $p <$

0.001), and emotional representation (β2 = −0.25, p < 0.001) predicts the changes in asthma control. These results confirm that illness representations predict the change in asthma control. Patients with a better understanding of their illness and who believe in their power to control their asthma showed greater improvements in asthma control than did other patients. On the contrary, patients who believe that their asthma has major consequences for their life and are more distressed showed smaller improvements in asthma control. People who do not think that they have control over their asthma (i.e. low Personal control) tend to have less understanding of it and to see more serious consequences for their life. Cognitions of low control over asthma symptoms may lead to more negative emotional asthma representations.

The study by Boonsatean W et al (2016) [100] found that socioeconomic status had an impact on the illness perception and self-management of people. Educational level demonstrated a significant influence on the perceptions and management, which was also true concerning income level, although to a lesser extent.

A descriptive study held by Giriyanna Gowda, et al [101] shows that the control of the symptoms of asthma is related to the perception of its symptoms. The study was conducted on 110 patients between age group of 21-30 years with bronchial asthma, patients were interviewed using the standard Illness Perception Questionnaire – Revised (IPQ - R). The results of this study shows that 104 (94.55%) subjects experienced breathlessness and 102 (92.73%) experienced wheezing; however, only 52(47.27%) and 71 (64.55%) subjects respectively, related these symptoms to asthma. According to the study the subjects reported pollution (105, 95.45%), diet (93, 84.55%), poor medical care in the past (50, 45.45%), hereditary (41, 37.27%) and stress/worry (41, 37.27%) as possible causes of asthma. In conclusion, Patients with bronchial asthma have poor illness perception. It was observed that 89.09 % of patients wanted a permanent cure for their disease, 79.09% believed that they

would become addicted to the medication if taken on a long term basis and 64.55% believed that the asthma medications had side effects. All these factors related to their illness perception leads to poor compliance with medication and therefore increased mortality and morbidity due to asthma.

A cross-sectional study by Silva ST et al 2022 [102] which included 149 subjects with moderate to severe asthma aimed to assess illness perception and its association with HRQoL and psychosocial disturbances. The findings shows that the subjects with worse illness perception have more negative consequences of the disease, worse understanding, and a high emotional representation of the disease, also had a greater extent of asthma symptoms, poor clinical control, worse HRQoL, and more symptoms of anxiety and depression.

Alexithymia

A descriptive prospective multicentric study by conducted by Serrano, J et al (2006) [103] shows there is failure to perceive dyspnoea when patients have difficulty in perceiving and expressing emotions and body sensations, which could lead to underestimation of the severity of an asthma exacerbation, plays a role in the delay in seeking medical help and thereby increase the risk of developing a fatal or near-fatal asthma (NFA) attack. The study was conducted on the sample of 179 NFA patients and 40 non-NFA patients, as a control group with both males and females of age >15 years. They were assessed on Toronto Alexithymia Scale. The results shows that the proportion of patients with alexithymia was significantly higher in the NFA group (36%) than in the non-NFA group (13%), with a higher level of psychiatric morbidity, a higher proportion of severe persistent asthma and a greater number of prior very severe asthma exacerbations (49 *versus* 27%). The results show that alexithymia is more frequent in near-fatal asthma patients compared to the rest of asthmatics and is associated with recurrent very severe asthma exacerbations.

A cross-sectional study conducted by Chugg K et al 2009 [104] indicated that higher alexithymia scores were associated with failure to communicate symptom severity to health care providers which is associated with inadequate asthma management and poor asthma control and with lower adherence to medication. [92] The study shows that there is lower asthma control in patients with moderate to severe asthma, even while controlling for psychological distress. Sample of the study includes twenty-five adult patients with moderate persistent to severe persistent asthma (14 females and 11 males) between 24 and 65 years of age. The finding shows that there is evidence of higher prevalence of alexithymia among patients with poorly controlled severe asthma. Alexithymia scores ranged from 23.0 to 76.0 ($x = 48.3$, $SD = 13.2$) across the sample (12% high alexithymia, 32% borderline alexithymia, and 56% low alexithymia). Higher alexithymia scores were associated with lower asthma control in patients with moderate to severe asthma. Alexithymia was positively related to the scores from the Juniper Asthma Control Questionnaire (ACQ) ($r = 0.57$, $p < 0.01$) (where higher ACQ scores indicate worse asthma control). The patient group has high alexithymia scores which is associated with poorer (self-reported) adherence, which could be expected to contribute to poorer control of asthma. The study also concludes that asthma patients with high alexithymia scores were more likely to experience near fatal asthma attacks, repeated severe exacerbations and a higher percentage of prior hospitalizations for asthma treatment.

Study by Isabel Vazquez et al 2010 [105] examined the relationship between alexithymia and health outcomes in 76 patients with moderate to severe asthma with age group ranges between 18 and 65 years. On the basis of Chi-square test, the Mann-Whitney U test, Spearman correlations and multiple linear regression analyses, the obtained results of the study showed that asthmatic patients with high alexithymia scores were more likely to experience near-fatal asthma attacks and a higher percentage of

previous hospitalizations for asthma treatment, [106] as well as worse health-related quality of life (HRQOL), poorer control of asthma, and poor self-report adherence. The results on different subscales of TAS-20 alexithymia test shows that DDF factor substantially affected how patients perceived the generic physical dimensions of their HRQOL, whereas the DIF factor was associated with a higher frequency of emergency room visits ($p = .005$) of adult patients with moderate to severe asthma. Thus, these dimensions of alexithymia are complicating factors in the management of asthma. The results of this study also indicated that alexithymia scores were associated with lower quality of life in patients with moderate to severe asthma.

A study by Baiardini, et.al 2011 [107] which evaluates alexithymia in 115 patients with persistent asthma using alexithymia, quality of life, illness perception, and stress assessment shows that out of 115 patients, 19% turned out to be alexithymic, obtained TAS-20 score is ≥ 61). Further findings of the study shows that patients with alexithymia had significantly lower scores on asthma Control Test in comparison to non-alexithymic patients (15.86 vs. 19; $p = .02$). Alexithymic patients had a worse quality of life ($p< .001$). Concerning on their illness perception, they ascribed to respiratory allergy symptoms that are not strictly disease related and referred to asthma as more serious negative consequences ($p < .001$) and emotional representations ($p < .035$). Moreover, they had lower illness coherence ($p < .001$) and lived their disease as a cyclical rather than a chronic disorder ($p < .035$). Considering their stress, alexithymic patients reported less energy ($p < .001$), higher levels of tension ($p < .001$), depression ($p < .001$), confusion ($p > .001$), and inertia ($p < .001$). The study concludes that in management of patient with alexithymia illness perception, quality of life, and stress should be considered.

A study held by *Samira Aouadi et al (2015) conducted on* 100 patients aimed to assess the prevalence of alexithymia in asthmatics and investigate the relationship between alexithymia and asthma control,

management, and health-related quality of life (HRQL).The result of the study shows the prevalence of alexithymia was 42% with a mean total score on the TAS-20 of 54.6±20. Alexithymia was related to a higher prevalence of anxiety (p=0.029), dysthymia (p=0.04) and panic troubles (p=0.03). A higher alexithymia score was associated with decreased pulmonary function (p=0.02), worse asthma control score (p=0.04), more emergency room visit (p=0.004), irregular follow-up (p=0,005) and poor adherence to asthma treatment. Thus, the level of alexithymia in asthma patients is high and it affects control of the disease and quality of life.

Larsen MH et al 2017 [108] conducted a study on 163 participants which aims to assess the frequency of alexithymia and its relationship with self-management and illness perception using TAS-20, BIPQ. The study shows that out of all patients, 14.1% were characterized as alexithymic. Alexithymic patients scored significantly worse in all heiQ domains, and reported worse illness perception.

A cross-sectional study by Vanegas E et al (2020) [109] was conducted on 265 patients. The findings shows a gender distribution of 69.4% female and an average age of 54.7 years. In total, 30.2% of individuals presented alexithymia. There was a statistically significant correlation between educational level and 20-item Toronto Alexithymia Scale categories (p<.001) as well as a higher proportion of severe (35.1%, p=.001) and uncontrolled (50.0%, p=.185) asthma in patients with alexithymia. The results also shows that individuals with alexithymia have severe asthma and more likely to have their disease uncontrolled.

Coping styles

Yellowlees PM et al 1989 [110] conducted a study on 25 patients of asthma. The 25 patients were comprised of 19 women and six men. Their mean age was 35.7 years (range 18 to 68, standard deviation 13.3). The mean age of the men was 39.5 years (range 18 to 68, standard deviation 18.8) and the women was 34.4 years (range 19 to 57, standard deviation 11.1). The study shows that nine of these diagnoses were anxiety disorders with

seven patients suffering from panic disorders and two from posttraumatic stress disorders. One patient was diagnosed as suffering from a major depressive illness. All patients had very high levels of denial and patients appeared to either decompensate psychiatrically, usually exhibiting symptoms of anxiety disorders, or further increase their levels of denial. The presence of high levels of denial of asthma and a history of psychiatric illness in the patient appear to be factors that may increase the likelihood of death from asthma.

A study held by Barton C et al 2003 [111] shows that there is increased rates of behavioural problems, anxiety and depression in people with moderate-to-severe asthma and these factors may interfere with adherence and contribute to poor asthma control which are more accurately predicted from the coping styles used by patients. Patients with asthma tended to use different strategies for coping with stress and illness compared to healthy participants and individuals. Emotion-focussed coping strategies such as denial were commonly used by patients with poor medication adherence and those who have more visits to emergency departments.

A study on the role of coping resources and coping style in quality of life of patients with asthma conducted by *Hesselink.et.al 2004* [112] aims to examine the association between psychosocial coping resources and coping style with HRQoL, for asthma. The study was conducted on 220 asthma patients. Results of the study shows that a more emotional coping style ($p < 0.01$) was independently associated with poor health related Quality of Life (HRQoL) in both asthma and COPD patients. Furthermore, in asthma patients, less self-efficacy feelings ($p < 0.01$), less mastery feelings ($p = 0.05$), a more avoidant coping style ($p = 0.04$) and poor pulmonary function ($p < 0.01$) were independently associated with poor HRQoL. Thus, the findings of the study suggest that psychosocial coping resources and coping style are independently associated with HRQoL in patients with asthma.

Nazarian D et al (2006) [113] held a study on 61 adults with a diagnosis of asthma to examine use of dispositional avoidant coping and asthma severity. The results shows that behavioural disengagement predicted more symptoms [F (1,1944)=6.77 (p<0.01), the use of denial as a coping strategy significantly predicted more symptoms [F(1,1911)=8.84 (p<0.01)] . Thus, the findings concludes that coping styles such as denial and behavioural disengagement predicted more asthma symptoms.

Beatriz Gonza´lez-Freire et al 2010, [114] study the relationship between coping styles and asthma severity. The study was carried out to analyze the relationship between the assessed coping dimensions and morbidity outcomes, such as frequency of emergency room visits and hospitalizations due to asthma. Study was conducted on 75 adult asthmatic patients, between age group of 18 to 75 years with absence of any other physical chronic disease or psychiatric diagnosis. Present study shows that in asthmatic patients, repressive coping style is reported by approximately 25% of patients. Patients who perceived their asthma as severe reported to use Emotion-Focused Coping (F(2,71) = 4.83, p = .011). A higher use of Denial (an Emotion-Focused strategy of coping) explained 8% of variance of the frequency of emergency room visits during the 12-month follow-up. The use of Emotion-Focused Coping strategies seems to be related to a worse perception of the physical status, and among this group of strategies. Patients who perceived their asthma as severe reported a greater use of Emotion Focused Coping than those who judge. Patients who reported greater use of Denial were more likely to end up in the hospital for acute exacerbations of their asthma. Thus, repressor asthmatics showed worse pulmonary function than non-repressors.

A observational cohort study held on 117 patients by Amore M et al 2013 [115] investigated the relationship between alexithymia, coping strategies, anxiety, depression, pulmonary function, and disease control in bronchial asthma patients. The findings shows that the patients with more

severity and higher alexithymia used more maladaptive coping strategies ($p < .05$), and had lower ACT scores ($p < .05$). Alexithymia was significantly associated with the severity of depression and anxiety symptoms ($p < .001$). In BA patients, higher alexithymia was associated with worse pulmonary function and disease control and a more frequent use of maladaptive coping strategies. These results support a multidimensional approach to asthmatic patients, including psychoeducational and behavioral interventions aimed at reducing maladaptive coping strategies.

Tiemensma J et al (2016) [116] aimed to assess the associations between illness perceptions, coping and QoL in COPD patients and to compare illness perceptions and coping of patients. A total of 100 patients were included in the study, were assessed on Illness Perception Questionnaire (B-IPQ), the Utrecht Proactive Coping Competence scale (UPCC), and a QoL. The result of the study shows that patients with better understanding of illness utilized more proactive coping strategies (P=0.04). A more intense emotional response to illness was related to less proactive coping (P=0.02).

Stoilkova A et al (2013) [117] conducted a study to assess the distribution of coping styles in patients entering pulmonary rehabilitation (PR) with and without anxiety and/or depression and to assess whether coping styles contribute to exercise intolerance and reduced health status. The study was conducted on 698 patients. The Utrecht Coping List (UCL), St. George's Respiratory Questionnaire, SGRQ), anxiety and depression (Hospital Anxiety and Depression Scale, HADS), and clinical characteristics were assessed. The result of the studies shows that high levels of active confronting coping style were reported by 16.5% of the patients. About half of the patients reported medium levels of: palliative reaction, seeking social support, and/or reassuring thoughts coping styles. Additionally, most patients used a medium (38.5%) or high (43.9%) levels of passive reaction pattern coping style. Patients with symptoms of anxiety

and/or depression reported a lower use of active confronting coping style and an increased use of avoidance and passive reaction pattern coping style than patients without symptoms of anxiety and/or depression. In patients with COPD hospitalized for an acute exacerbation was shown that a passive reaction pattern coping style and avoidance coping style were used more frequently by patients with psychological distress. Thus, coping styles may also be related to symptoms and health status and avoidance, passive reaction pattern coping style were more used by patients with symptoms of anxiety and/or depression.

A study held by Hagger, M. S.,et.al 2003 [118] shows a significant relationship between perceptions of strong illness identity and use of coping strategies based on avoidance and emotion expression. The study further shows that perceived controllability of the illness was significantly associated with cognitive reappraisal, expressing emotions and problem-focused coping strategies. The patients who perceive their illness as highly symptomatic, having a chronic timeline and serious consequences shows significant correlation with avoidance and expressing emotions coping strategies. Those who perceive their illness as curable/controllable was significantly and positively related to the adaptive outcomes of psychological well-being, social functioning and vitality and negatively related to psychological distress and disease state. On the contrary, illness consequences, timeline and identity exhibited significant, negative relationships with psychological wellbeing, role and social functioning. The analyses provide evidence for theoretically predictable relations between illness cognitions and coping.

Psychological Distress

The study conducted by Di Marco et al 2010 [119] investigated the correlation between patients' anxiety and depression and the level of asthma control. It was a cross-sectional study conducted on sample of 315 patients aged >18 years, diagnosed with asthma of all severity levels. Assessment tests used were hospital anxiety and depression scale

(HADS), asthma control test (ACT). The results shows patients with poorly controlled asthma were more frequently women, in comparison with males, by higher mean age, longer asthma duration, lower level of asthma control, higher rate of emergency department visits for asthma and higher level of anxiety and depression. The results of the study show a significant correlation between a poor level of asthma control and both anxiety (OR: 3.76) and depression (OR: 2.45), which are frequent disorders in asthmatic subjects. Moreover, the presence of anxiety and depression was associated with a higher healthcare utilization. Lavoie et al.19 found that depressive and anxiety disorders are independently associated with low asthma-related quality of life, but that only depressive disorders are independently associated with low levels of asthma control.

A cross sectional study was held by Vieira et al (2011) [120] to determine the level of asthma control with anxiety and depression. The sample of the study involved 78 patients diagnosed with moderate or severe asthma and under regular treatment. The subjects were assessed using the asthma control test, asthma quality of life and hospital anxiety/depression scale. The result of the study shows that of the 78 patients, 49(63%) were classified as having uncontrolled asthma. The prevalence of anxiety and of anxiety and depression was significantly higher among patients with uncontrolled asthma than among those with controlled asthma (78% and 100%; $p = 0.04$ and $p = 0.02$, respectively).

The study conclude that the prevalence of anxiety symptoms was higher in the patients with uncontrolled asthma than in those with controlled asthma and this can make it difficult to achieve asthma control.

A cohort study held by Krauskopf KA et al 2013 [121] examines the impact of depressive symptoms on outcomes and medication adherence in asthma patient. The study included patients >60 years of age with a diagnostic label of asthma (Dyer 1999). Patient Health Questionnaire (PHQ-9) was used to assess depression. Asthma control was evaluated using the Asthma Control Questionnaire (ACQ). Mini-Asthma Quality of

Life Questionnaire (AQLQ) and medication adherence reporting scale (MARS) were also used in the study. Results of the study shows that 55 (17%) elderly patients with asthma reported clinically significant symptoms of depression. It was found that participants with clinically significant depressive symptoms had significantly higher ACQ scores, indicating poorer asthma control with mean score difference: 1.01 and $p < .001$. In the study it was also seen that participants with clinically significant depressive symptoms have lower medication adherence. Thus, on the basis of findings of the study individual with depressive symptoms were more likely to report poor asthma control, worse asthma qualify of life and also lower medication adherence.

Ciprandi G et al 2015 [*122]* conducted a study to investigate the effect of anxiety and depression in asthma patients. It was a cross-sectional, conducted on 263 patients. Hospital Anxiety Depression Scale (HADS) and ACT questionnaires, and asthma control level were evaluated. Results of the study shows, the mean ACT score was 20 (4.4). The mean HADS score was 6.4 (4.1) for anxiety and 3.8 (2.9) for depression. Results shows that 97 patients (36.9%) had anxiety, 29 (11%) had depression and 71 had combined anxiety and depression. Patients with reported asthma symptoms had higher HADS depression scores than patients without them (P ¼ .02). Patients with abnormal HADS anxiety and depression scores had significantly ($P < .001$) lower ACT scores. A significant weak negative correlation was observed between ACT and HADS (HADS anxiety and ACT: Spearman r: -0.37, $P < .001$; HADS depression and ACT: Spearman r: -0.35, $P < .001$). Thus, the study indicates that anxiety and depression are common and relevant comorbidities in asthmatic outpatients and are associated with uncontrolled asthma and lower Asthma Control Test scores.

A study by Beyhan Sagmen, S et al 2020 [123] aimed to evaluate psychiatric comorbidities such as anxiety and depression in addition to coping strategies in terms of stress management and social desirability in

asthma patients, and their impact on asthma control. A total of 88 adult asthma patients were included in the study. All participants completed the following questionnaires: asthma control test (ACT) the Hospital Anxiety and Depression Scale (HADS), the Coping Strategies with Stress Inventory-Short Form (COPE), and the Marlowe Crowne Social Desirability Scale-Short Form (MCSD). Result of the study shows that anxiety was found in 55% and depression was found in 62% of asthmatic patients. Compared to men (32%), a significantly higher proportion of women (61%) had anxiety (P = 0.023). “Turning to religion and Planning” were the leading coping strategies in all asthmatics. 41% of patients had controlled asthma while 59% had uncontrolled asthma. “Seeking Social Support for Instrumental Reasons” was more common in patients with uncontrolled asthma than in those with controlled asthma (P = 0.029). The coping strategies of “Behavioral Disengagement” (P = 0.02, P = 0.011, respectively) and “Self-Accusation” (P = 0.018 and P = 0.016, respectively) were more prevalent among patients with anxiety and depression. Thus, the study concludes that psychiatric disorders (anxiety and depression) affect the clinical course of asthma and more maladaptive styles were used by patients who scored high on anxiety and depression.

Asthma patients with poor perception of their illness, high alexithymia scores may use maladaptive coping styles and might have more psychological distress in terms of anxiety and depression which might trigger asthma severity. This would deteriorate the functional outcome of the patient. With the help of appropriate timely psychological assessment and therapeutic management early implementation of psycho-educational programs and relaxation exercises and other appropriate therapy can be planned.

There have been studies in the past that have made efforts to study the illness perception, alexithymia, coping styles and psychological distress in asthma patients however these variables were studied separately. However, there is still dearth of research to study relationship among

these variables. Further, very few studies have been done on this topic in Indian population. There has been little work investigating the different coping styles used in asthma patients and relationship between coping styles and asthma management, in particular adherence with asthma medication regimens.

MATERIALS AND METHODS

SOURCE OF DATA

Study was conducted on 50 individual diagnosed and undergoing treatment for Asthma from both In-patient-department and Out-patient department at Dayanand Medical College and Hospital, Ludhiana and 50 healthy individuals (control group).

METHOD OF COLLECTION OF DATA

Design: Cross-sectional study.

Sample size: 50 individuals diagnosed with asthma and 50 healthy control group.

Sample design: Purposive sampling design was used. The respondents who meet the inclusion criteria was selected for the study.

INCLUSION CRITERIA (study group)

- Individual diagnosed with Asthma.
- Undergoing Pharmacological treatment.
- Age group between 18 to 75 years.
- Gender: Both males and females/Either gender.
- Individuals who gave informed consent.

EXCLUSION CRITERIA (study group)

- Individuals with any psychiatric illness.
- Diagnosed with any other comorbid terminal illness.
- Individual who were not willing to give informed consent.

INCLUSION CRITERIA (control group)

- Individuals with no history of any psychiatric illness.
- Individuals with no history of any diagnosed significant medical illness.
- Age group between 18 to 75years.
- Gender: Both males and females/Either gender
- Individual who gave informed consent.

EXCLUSION CRITERIA (control group)

- Individual with any Psychiatric illness.
- Individual with any other chronic illness.
- Individual who were not willing to give informed consent.

METHODOLOGY

The study was conducted on 50 individual with Asthma, admitted in In-patient department and visiting Out-patients department at Dayanand Medical College and Hospital, Ludhiana and 50 healthy individual as control group. Age ranging between 18-75 years, of either gender, for both individual diagnosed with asthma and healthy individuals. Socio-demographic proforma was filled containing the basic information of the subject and they were evaluated on Illness Perception using Brief Illness Perception Questionnaire (Brief-IPQ), Alexithymia using Toronto Alexithymia scale, coping style using Brief-Cope Inventory and Psychological distress using The Hospital Anxiety and Depression Scale (HADS), The General Health Questionnaire - 12 (GHQ - 12) to assess any mental illness in the control group.

TOOLS:

1. Socio-demographic proforma.
2. Brief-Illness-perception Scale.
3. Toronto Alexithymia scale.
4. Brief-Cope Inventory.
5. The Hospital Anxiety and Depression Scale (HADS).
6. The General Health Questionnaire - 12 (GHQ - 12).

1. Socio-demographic proforma: It included the name, age, sex, mrd.no, education, occupation, marital status, address, contact no., family type, education of the head of family, occupation of the head of family, monthly income of the family, socio economic status, diagnosis, duration

of illness, medication details, any psychiatric illness and scores of all the test.

2. The Brief Illness Perception Questionnaire (Brief IPQ):

The Brief Illness Perception Questionnaire (Brief IPQ) is a 9-item questionnaire designed to rapidly assess illness perception, cognitive and emotional representations of illness. (Broadbent et al 2006) [124] The Brief IPQ uses a single-item scale approach to assess perception on a 0(minimum)–10 (maximum) response scale. The Brief IPQ comprises 5 items on cognitive representation of illness perception: consequences, timeline, personal control, treatment control, and identity. There are 2 items on emotional representation: concern and emotions. One item is on illness comprehensibility. The last item is open ended question on perceived cause of illness, in which three most important causal factor for illness has to be reported. The overall score can be computed which represents the degree to which the illness is perceived as threatening or benign. Higher scores represent a more threatening views of the illness. Test-retest reliability (Pearson correlations 0.24–0.73). IPQ-R has good correlations when tested for concurrent validity.

3. The Toronto Alexithymia Scale (TAS-20):

The Toronto Alexithymia Scale (TAS-20) is a self-report scale that measures alexithymia. It was developed by Bagby, Parker and Taylor (1994) [125] to measure alexithymia or difficulty in experiencing, identifying, describing and verbally communicating one's feelings to others, along with ability to minimize their emotional experience and pay more attention on external events. The TAS comprised of 20-items. Items are rated using a 5-point Likert scale ranging from strongly disagree (01) to strongly agree.

The TAS-20 has three subscales:

• Difficulty Describing Feelings (DDF) subscale is used to measure difficulty describing emotions.

• Difficulty Identifying Feeling (DIF) subscale is used to measure difficulty identifying emotions.

• Externally-Oriented Thinking (EOT) subscale is used to measure the tendency of individuals to focus their attention externally.

There are total 5 items that measure DDF: items 2,4,11,12 and 17. A total of 7 items measures DIF: Items 1,3,6,7,9,13 and 14. The other 8 items measure EOT: items 5, 8,10,15,16,18,19 and 20. Item number 4,5,10,18 and 19 are scored reversely. A sum of all the items provides a total score on the alexithymia construct, whereas, individual subscale scores can be inferred from the sum of a subscale score. The maximum score that can be obtained on TAS-20 is 100, where higher score suggest higher alexithymia in an individual. A total score of 51 indicates non-alexithymia, a score of 61 or more suggests alexithymia and scores between 52 and 60 indicates possible alexithymia. The scale has a good internal consistency where Cronbach's alpha=.81 and test-retest reliability =.77. The studies that have used TAS-20 in their research depicts a good convergent and concurrent validity. The scale has been well replicated in clinical as well as general population.

4. Brief-cope:

The Brief-Cope was developed by Carver et al., 1989. [126] It is developed as a short version of the original 60-item COPE scale. The Brief-COPE is a 28 item self-report questionnaire designed to measure effective and ineffective ways to cope with a stressful life event.

Scoring-Responses are scored on a 4-point scale that indicates how much the respondent has used the coping strategy depicted by the item:-

1-I haven't been doing this at all.

2-I've been doing this a little bit.

3-I've been doing this a medium amount.

4-I've been doing this a lot.

The scale can determine someone's primary coping styles as either Approach Coping, or Avoidant Coping. It has following subscales are reported: Self-distraction, Active coping, Denial, Substance use, Use of emotional support, Use of instrumental support, Behavioral disengagement, Venting, Positive reframing, Planning, Humor, Acceptance, Religion, & Self-blame.

Internal consistencies ranged from 0.25 to 1.00. Intra-class Correlation Coefficient (ICC) ranged from 0.05 to 1.00. Cronbach's alphas for the Brief COPE sub-scales range from 0.50 to 0.90.

5. The Hospital Anxiety and Depression Scale (HADS):

The Hospital Anxiety and Depression Scale (HADS) was devised 30 years ago by Zigmond & Snaith.et.al [127] to measure anxiety and depression in a general medical population of patients. It has become a popular tool, for clinical practice and research. The HADS is a fourteen item scale that generates: 7 of the items relate to anxiety and 7 relate to depression, HADS used in assessing severity and caseness of anxiety disorders and depression in both somatic, and psychiatric cases and in primary care patients and the general population".

The internal consistency reliability, assessed with ordinal alpha, was 0.92 for HADS Anxiety and 0.88 for HADS Depression. The corresponding internal consistency measured with traditional Cronbach's alpha was 0.87 and 0.81 respectively. Cronbach's alpha coefficient (to test reliability) has been found to be 0.78 for the HADS anxiety sub-scale and 0.86 for the HADS depression sub-scale.

Scoring: Total score: Depression (D) _____ Anxiety (A) _____

Scores classification:

0-7 = Normal

8-10 Borderline abnormal (borderline case)

11-21 Abnormal (case)

6.The General Health Questionnaire - 12 (GHQ - 12)

The General Health Questionnaire abbreviated at GHQ-12 was developed by Goldberg.et.al 1977. [128] It was developed as a self-administered for detection of any psychiatric morbidity in general population. It will be administered to the healthy control group to detect individuals who are at a risk of developing psychiatric disorders. It has been divided into four subscales: somatic symptoms, anxiety/insomnia, social dysfunction and severe depression and thus It is mainly focused on depressed, anxiety, social life related problems and somatic related complaints. It consists of 12 items which helps in identification of psychiatric morbidity of the patients. It is considered as simple interpretation technique as scores obtained from GHQ-12 can easily interpreted through measure of severity, prevalence and indicator of psychiatric disorder in individuals. The Cronbach's alpha of the GHQ-12 is 0.9.

Procedure

The study was conducted on a total of 100 participants amongst which 50 were individual diagnosed with Asthma. The individuals with asthma were chosen from department of Chest at Dayanand Medical College and Hospital, Ludhiana (inpatient and outpatients). The research also included a control group of 50 healthy individuals with no history of any diagnosed significant medical illness or any psychiatric illness. The subject for control group were selected from general population. The sample of the study includes both males and females with age group between 18 to 75 years. A written consent was duly signed by all the participants. The participants were well informed about the confidentiality of their information. After the written consent was taken from the participants, basic socio-demographic information was collected through a semi-structured proforma which includes name, age, sex, mrd.no, education, occupation, marital status, address, contact no., family type, education of the head of family,

occupation of the head of family, monthly income of the family, socio economic status, diagnosis, duration of illness, medication details, any psychiatric illness and scores of all the test.

The individuals with asthma were assessed on brief illness perception questionnaire (Brief-IPQ) to measure cognitive and emotional representations of illness.

After the assessment of brief illness perception questionnaire (Brief-IPQ), Toronto Alexithymia scale (TAS-20) was administered on both study and control group to assess the participants on alexithymia construct.

Brief cope was administered on both groups to measure effective and ineffective ways of coping with a stressful life event.

Further, the Hospital Anxiety and Depression Scale (HADS) to both groups to measure anxiety and depression.

Lastly, the healthy control group was assessed on the General Health Questionnaire (GHQ - 12) in order to screen the participants and detect the risk of developing psychiatric difficulties.

STATISTICAL ANALYSIS

Data was described in terms of range; mean ± standard deviation (±SD), median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. Comparison of quantitative variables between the groups was done using Student t-test and Mann Whitney U test for independent samples for parametric and non-parametric data respectively. To compare mean difference in more than two groups Anova test was used. For comparing categorical data, Chi square ($\chi 2$) test was performed and exact test was used when the expected frequency is less than 5. Spearman's Rank Correlation was done to find relationship between variables. A probability value (p value) less than 0.05 was considered statistically significant. All statistical calculations was done

using (Statistical Package for the Social Science) SPSS 21version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows.

OBSERVATIONS AND RESULTS

Table 1: Shows the mean age of study and control group.

		Study Group (N=50)		Control Group (N=50)		Total	Chi-square value	df	p-value
		No. of cases	%age	No. of cases	%age				
Age group	< 30	6	12%	10	20%	16	1.296	2	NS(0.05)
	31-50	15	30%	15	30%	30			
	50-75	29	58%	25	50%	54			
Total		50	100%	50	100%	100			

NS=non-significant

Figure 1: Shows the mean age of study and control group.

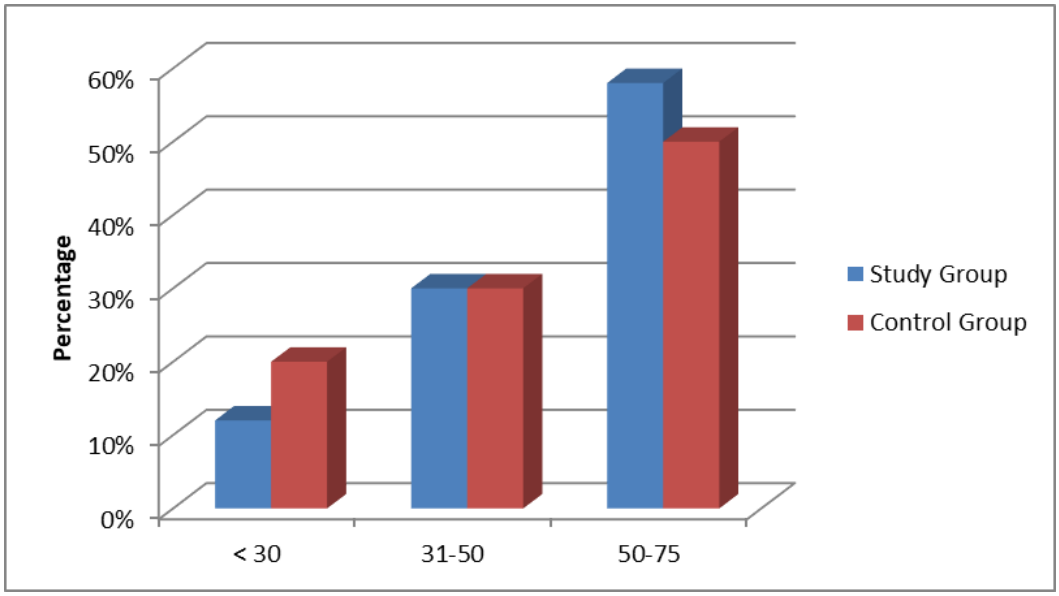


Table 2: Shows the gender-wise distribution of the study and control.

		Study Group (N=50)		Control Group (N=50)		Total	Chi-square value	df	p-value
		Study Group	Study Group	Control Group	Control Group				
Sex	F	25	50%	27	54%	52	0.16	1	NS (0.05)
	M	25	50%	23	46%	48			
Total		50	100%	50	100%	100			

NS=Not significant

Figure 2: Shows the gender-wise distribution of the study and control.

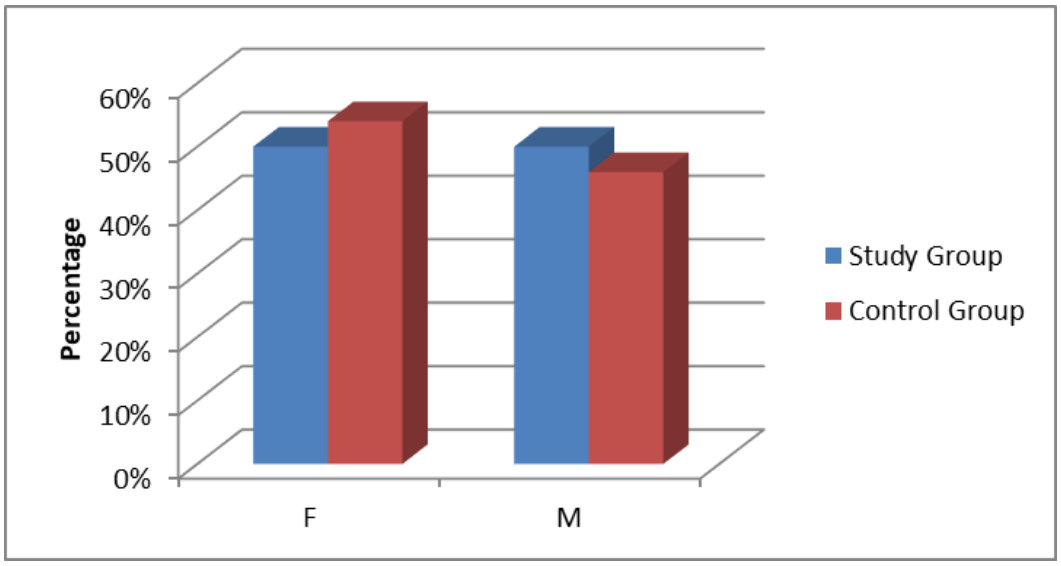


Table 3: Shows the distribution of study and control group in terms of education qualification.

		Study Group (N=50)		Control Group (N=50)		Total	Chi-square value	df	p-value
		Study Group	Study Group	Control Group	Control Group				
Education	10th	4	8%	4	8%	8	5.265	6	NS (0.05)
	12th	8	16%	13	26%	21			
	graduate	11	22%	15	30%	26			
	illiterate	11	22%	5	10%	16			
	PG	7	14%	7	14%	14			
	upto metric	9	18%	6	12%	15			
Total		50	100%	50	100%	100			

NS=Not significant

Figure 3: Shows the distribution of study and control group in terms of education qualification.

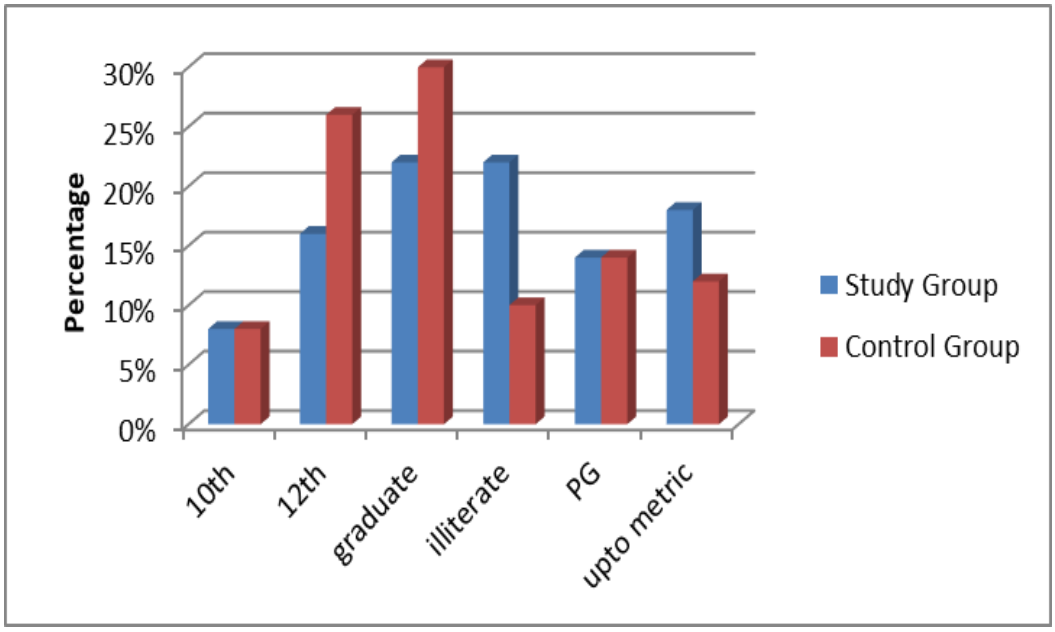


Table 4: Shows the distribution of study and control group in terms of occupation.

		Study Group (N=50)		Control Group (N=50)		Total	Chi-square value	df	p-value
		Study Group	Study Group	Control Group	Control Group				
Occupation	farmer	7	14%	4	8%	11	8.047	6.000	NS (0.05)
	other	4	8%	0	0%	4			
	professional	9	18%	10	20%	19			
	shopkeeper	1	2%	2	4%	3			
	skilled worker	3	6%	7	14%	10			
	student	6	12%	10	20%	16			
	unemployed	20	40%	17	34%	37			
Total		50	100%	50	100%	100			

NS=Not significant

Figure 4, shows the distribution of study and control group in terms of occupation.

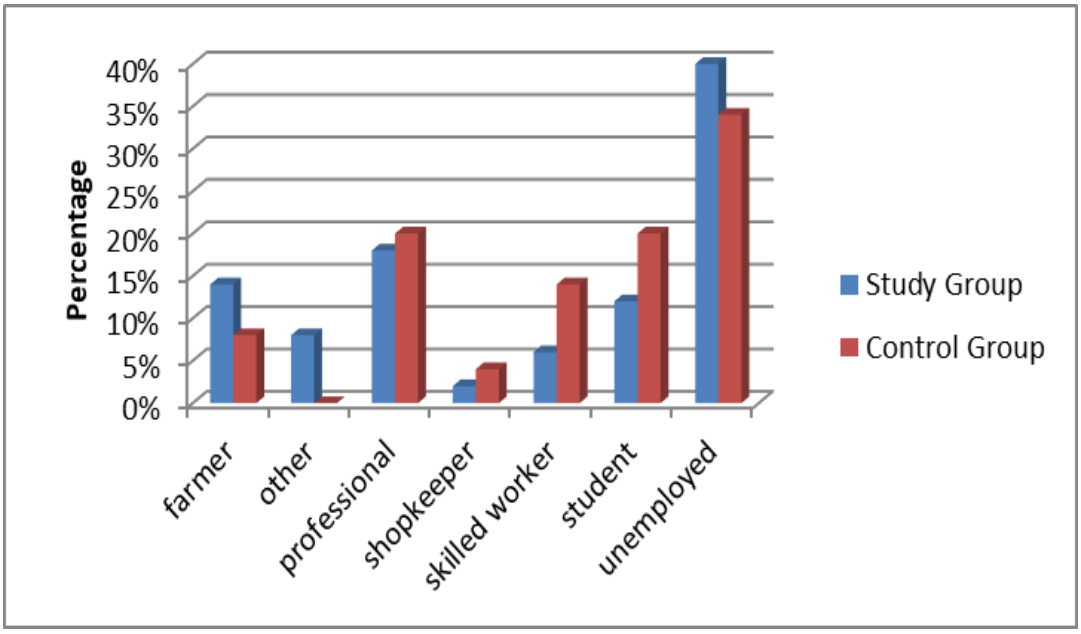


Table 5: Shows the distribution of study and control group in terms of marital status.

		Study Group (N=50)		Control Group (N=50)		Total	Chi-square value	df	p-value
		Study Group	Study Group	Control Group	Control Group				
marital status	married	42	84%	36	72%	78	2.098	1	NS (0.05)
	unmarried	8	16%	14	28%	22			
Total		50	100%	50	100%	100			

NS=Not significant

Figure 5: Shows the distribution of study and control group in terms of marital status.

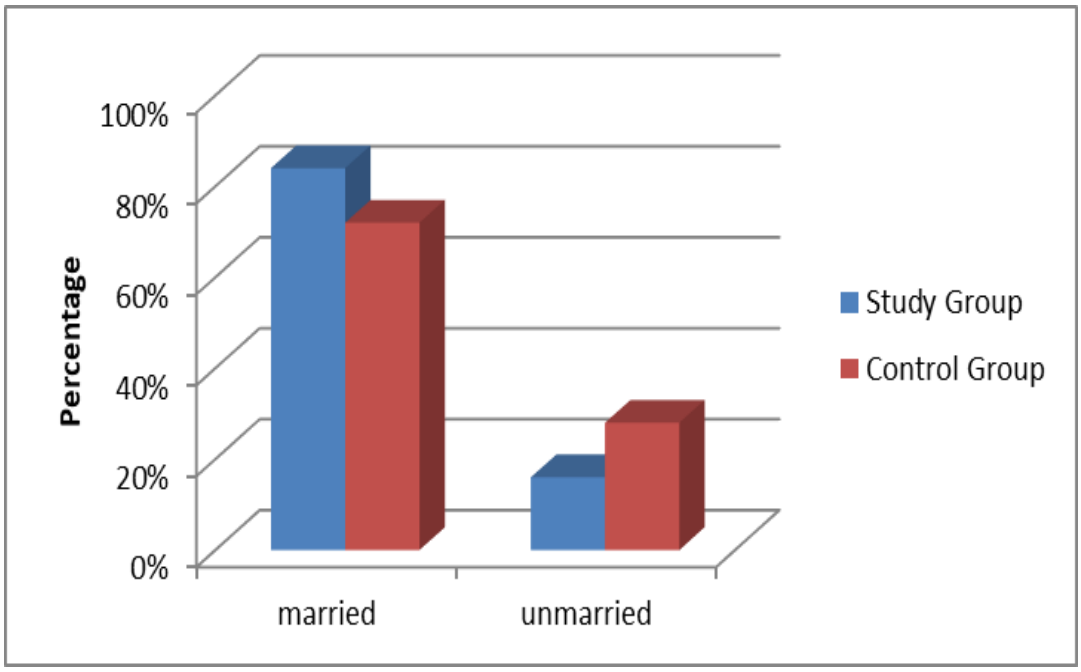


Table 6: Shows the distribution of study and control group in terms of locality/region.

		Study Group (N=50)		Control Group (N=50)		Total	Chi-square value	df	p-value
		Study Group	Study Group	Control Group	Control Group				
Urban /rural	rural	19	38%	23	46%	42	0.657	1	NS (0.05)
	urban	31	62%	27	54%	58			
Total		50	100%	50	100%	100			

NS=Not significant

Figure 6: Shows the distribution of study and control group in terms of locality/region.

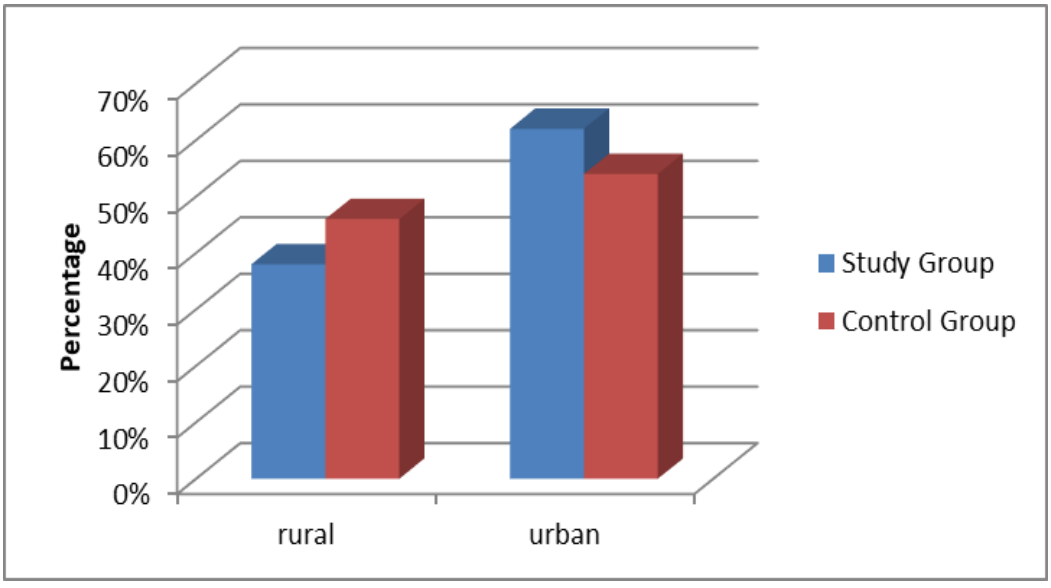


Table 7: Shows the distribution of study and control group in terms of socio-economic status.

		Study Group (N=50)		Control Group (N=50)		Total	Chi-square value	df	p-value
		Study Group	Study Group	Control Group	Control Group				
SES	LM	15	30%	12	24%	27	2.932	3.000	NS (0.05)
	U	3	6%	5	10%	8			
	UL	12	24%	7	14%	19			
	UM	20	40%	26	52%	46			
Total		50	100%	50	100%	100			

NS=Not significant, SES=Socio-economic status, LM=lower middle, U=upper, UL=upper lower, UM=upper middle

Figure 7: Shows the distribution of study and control group in terms of socio-economic status.

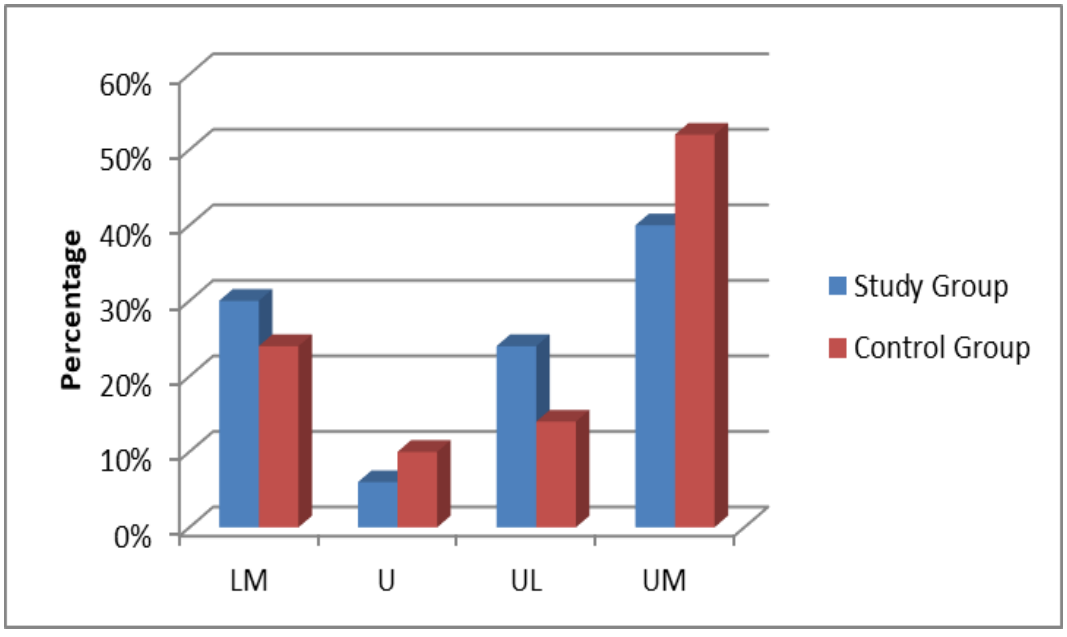


Table 8: Shows the difference between mean values of duration of illness in B-IPS in study group.

		N	Mean	SD	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	F	df	p-value
	DOI					Lower Bound	Upper Bound					
B-IPS	0-5 years	23	62.8	13.8	2.9	56.8	68.7	36.0	83.0	17.655	2	0.01
	6-10 years	8	53.8	13.6	4.8	42.4	65.1	38.0	76.0			
	> 10 years	19	40.8	8.3	1.9	36.8	44.8	29.0	61.0			
	Total	50	53.0	15.5	2.2	48.6	57.4	29.0	83.0			

B-IPS=brief illness perception scale, DOI=duration of illness

Figure 8: Shows the difference between mean values of duration of illness in B-IPS in study group.

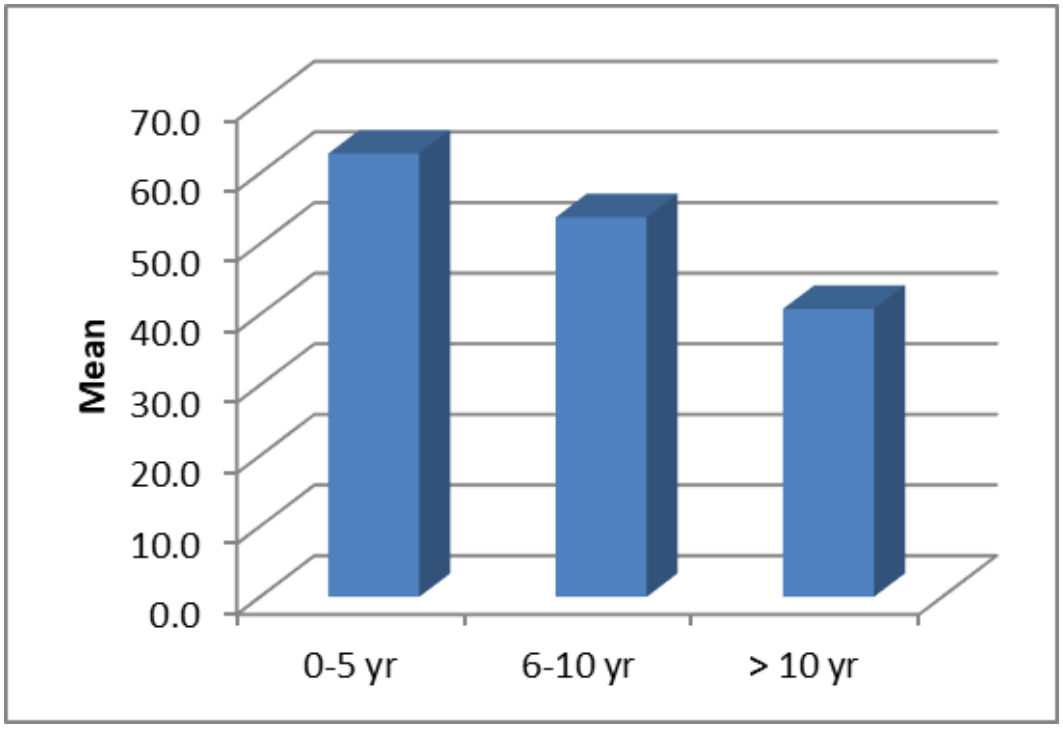


Table 9: Shows correlation between DOI and B-IPS.

Spearman's rho		B-IPS
DOI (In years)	Correlation Coefficient	-0.729
	p-value	0.01
	N	50

B-IPS=brief illness perception scale, DOI=duration of illness

Figure 9: Shows correlation between DOI and B-IPS.

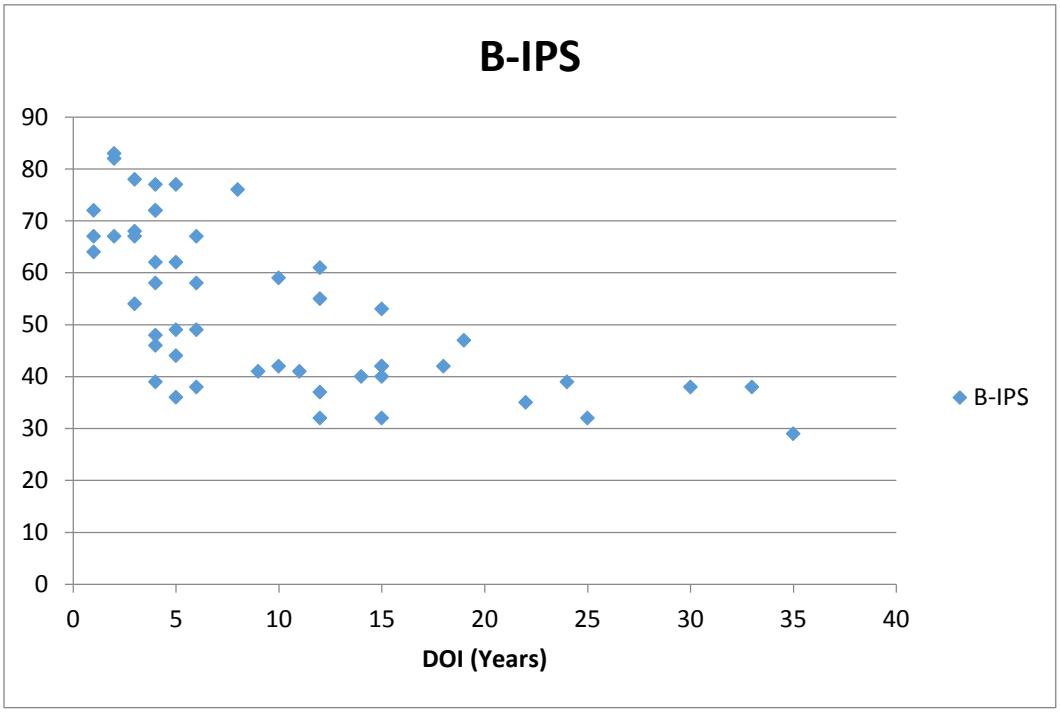


Table 10: Shows the difference between mean values of gender in B-IPS in the study group.

	Sex	N	Mean	Std. Deviation	Std. Error Mean	Z	p-value
B-IPS	F	25	49.80	13.429	2.686	-1.469	NS (0.05)
	M	25	56.16	16.970	3.394		

B-IPS=brief illness perception scale, NS=Not significant

Figure 10: Shows the difference between mean values of gender in B-IPS in the study group.

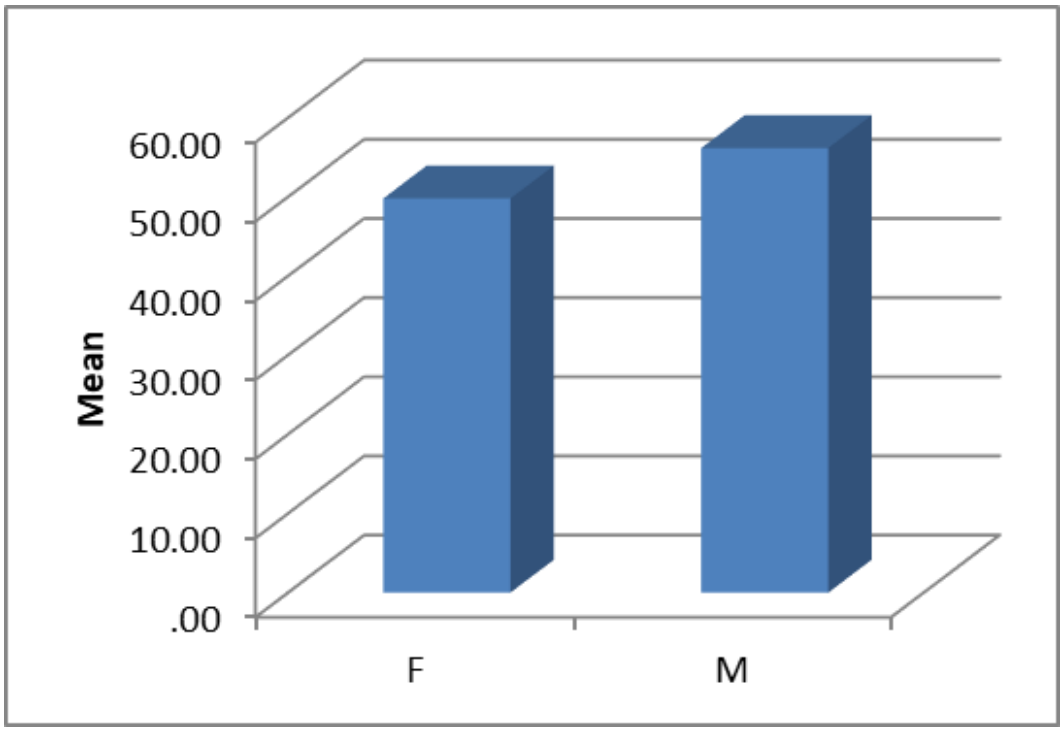


Table 11: Shows the difference between mean values in terms of locality/region in B-IPS in study group.

	Urban /rural	N	Mean	Std. Deviation	Std. Error Mean	Z	p-value
B-IPS	rural	19	42.53	10.453	2.398	-4.376	0.01
	urban	31	59.39	14.639	2.629		

B-IPS=brief illness perception scale

Figure 11: Shows the difference between mean values in terms of locality/region on B-IPS in study group.

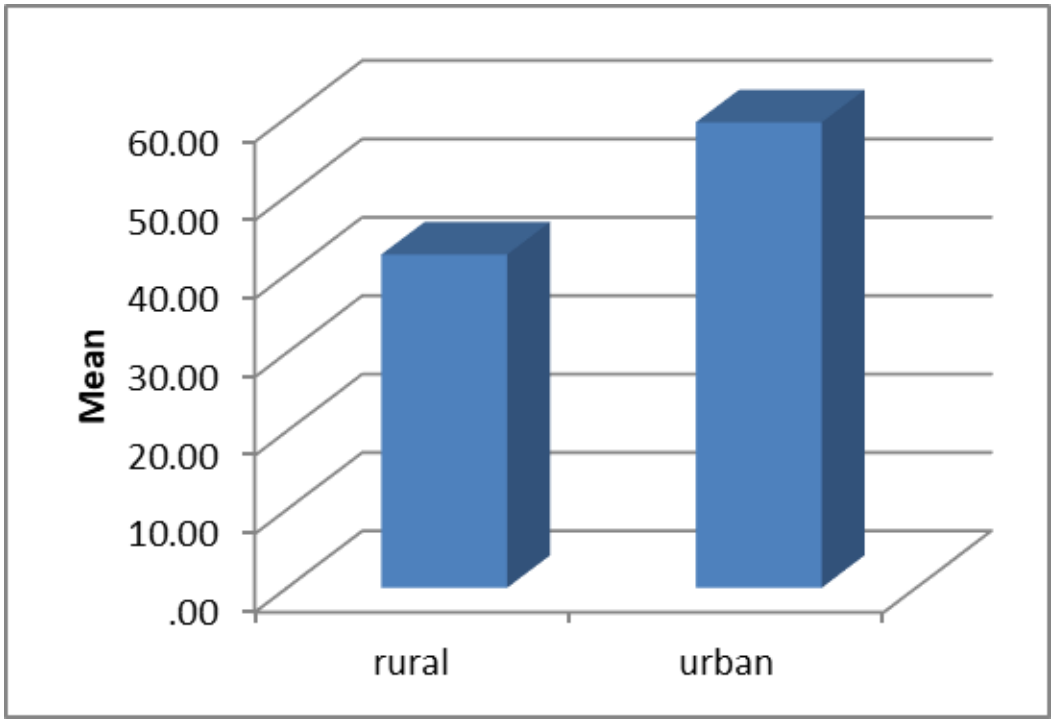


Table 12: Shows the difference between levels of educational qualification in B-IPS in study group.

B-IPS	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	F	p-value
					Lower Bound	Upper Bound				
illiterate	11	39.64	4.388	1.323	36.69	42.58	32	47	15.734	0.01
upto metric	9	38.89	5.372	1.791	34.76	43.02	32	49		
10th	4	51.00	6.218253	3.109126	41.10537	60.89463	44	58		
12th	8	58.13	10.063	3.558	49.71	66.54	40	68		
graduate	11	62.82	15.741	4.746	52.24	73.39	29	82		
PG	7	71.86	9.008	3.405	63.53	80.19	55	83		
Total	50	52.98	15.482	2.189	48.58	57.38	29	83		

Figure 12: Shows the difference between levelsof educational qualification in B-IPS in study group.

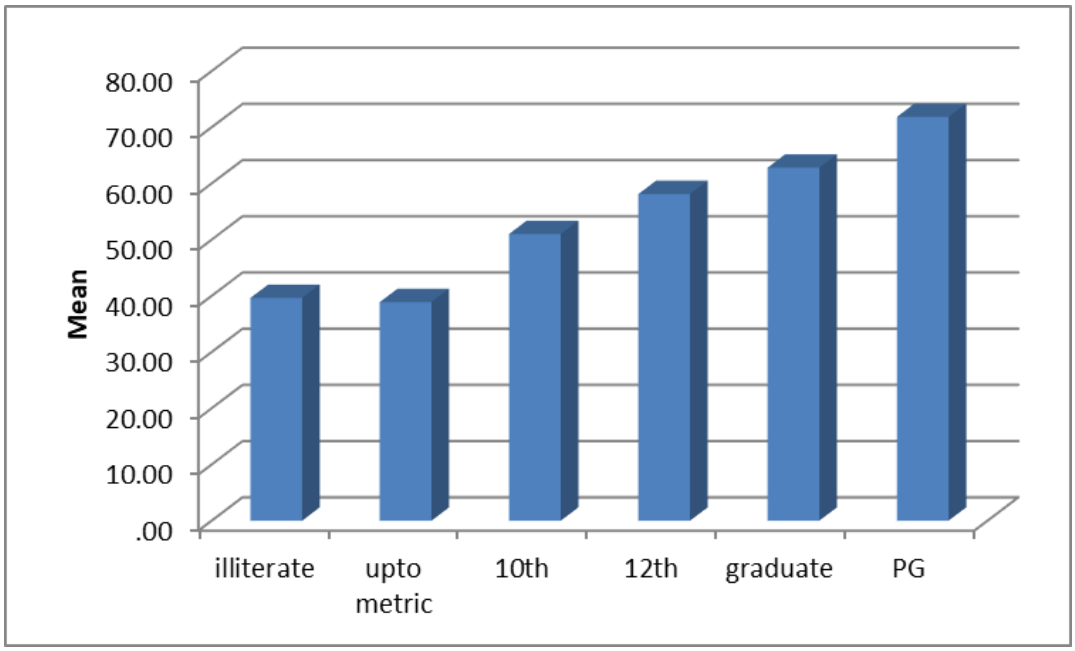


Table 13: Shows the difference between levels of occupation in B-IPS in study group.

B-IPS	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	F	p-value
					Lower Bound	Upper Bound				
farmer	7	36.43	4.860	1.837	31.93	40.92	29	42	10.179	0.01
professional	9	66.11	12.673	4.224	56.37	75.85	42	83		
shopkeeper	1	53.00	.	.	.	.	53	53		
skilled worker	3	60.33	10.017	5.783	35.45	85.22	49	68		
student	6	72.17	7.223	2.949	64.59	79.75	62	82		
unemployed	20	45.75	10.376	2.320	40.89	50.61	32	67		
other	4	54.25	17.500	8.750	26.40	82.10	40	77		
Total	50	52.98	15.482	2.189	48.58	57.38	29	83		

B-IPS=brief illness perception scale

Figure 13: Shows the difference between levelsof occupation in B-IPS in study group.

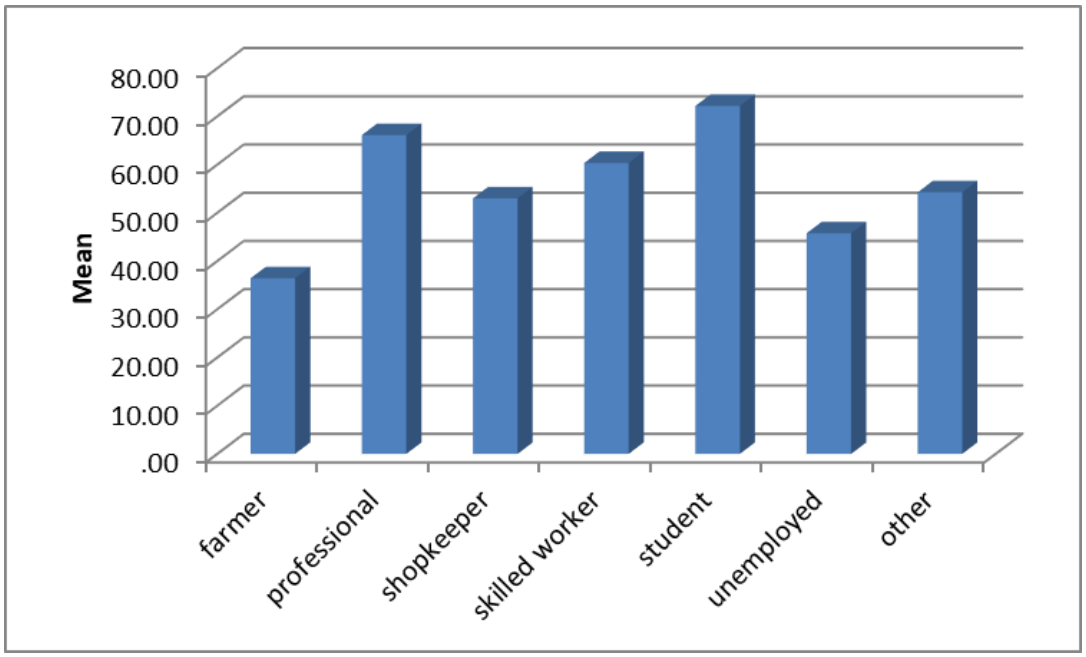


Table 14: Shows the difference between levels of socio-economic status in B-IPS in study group.

B-IPS	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	F	p-value
					Lower Bound	Upper Bound				
LM	15	41.20	6.930	1.789	37.36	45.04	29	53	23.717	0.01
U	3	70.67	10.970	6.333	43.42	97.92	58	77		
UL	12	43.08	10.308	2.976	36.53	49.63	32	67		
UM	20	65.10	11.539	2.580	59.70	70.50	40	83		
Total	50	52.98	15.482	2.189	48.58	57.38	29	83		

B-IPS=brief illness perception scale, LM=lower middle, U=upper, UL=upper lower, UM=upper middle

Figure 14: Shows the difference between levels of socio-economic status in B-IPS in study group.

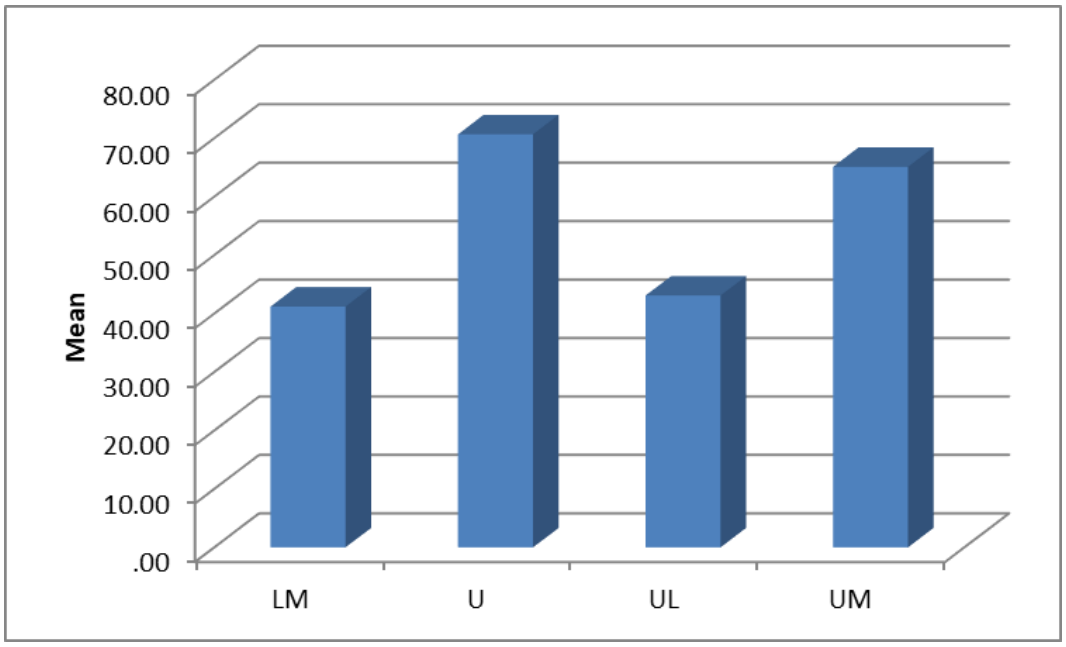


Table 15: Shows the distribution of alexithymia in study and control group.

		Study Group		Control Group		Total	Chi-square value	df	p-value
		Study Group	Study Group	Control Group	Control Group				
TAS GROUP	< 51	21	42%	38	76%	59	18.398	2	0.01
	52-60	3	6%	6	12%	9			
	> 61	26	52%	6	12%	32			
Total		50	100%	50	100%	100			

TAS=Toronto alexithymia scale

Figure 15: Shows the distribution of alexithymia in study and control group.

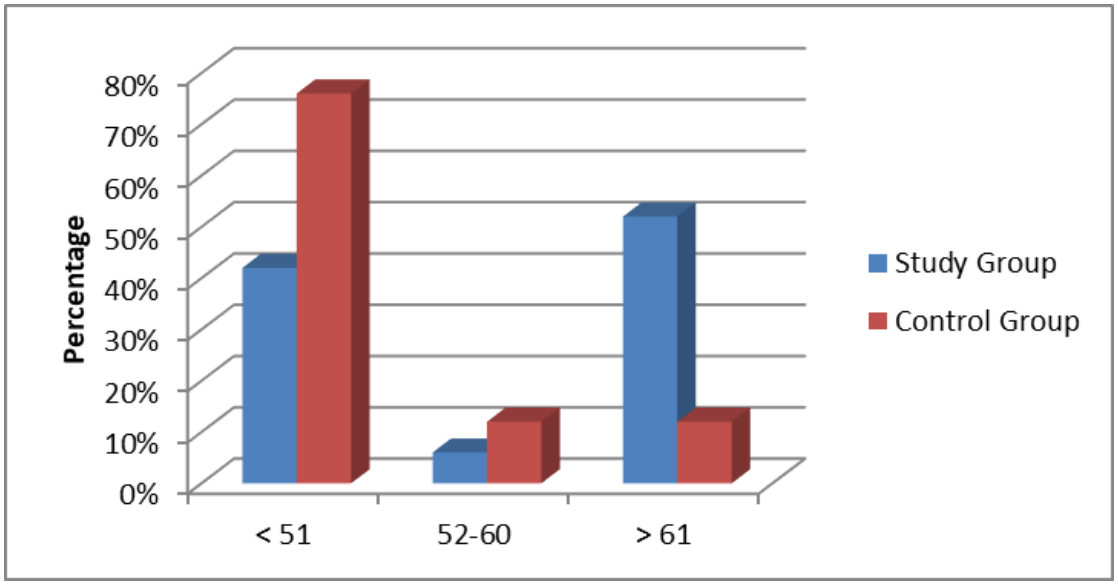


Table 16: Shows the difference between mean value on DDF, DIF, EOT AND TAS in both study and control group.

	Study Group		Control Group		Z	df	p-value
	Mean	SD	Mean	SD			
DDF	13.98	4.98	9.84	3.04	5.015	98	0.01
DIF	20.00	7.07	13.42	5.53	5.186	98	0.01
EOT	22.66	7.10	16.48	5.80	4.765	98	0.01
Total TAS	56.66	18.49	39.64	14.11	5.176	98	0.01

DDF= Difficulty Describing Feelings, DIF= Difficulty Identifying Feelings, EOT= Externally Oriented Thinking, TAS= Toronto alexithymia scale

Figure 16: Shows the difference between mean value on DDF,DIF, EOT AND TAS in both study and control group.

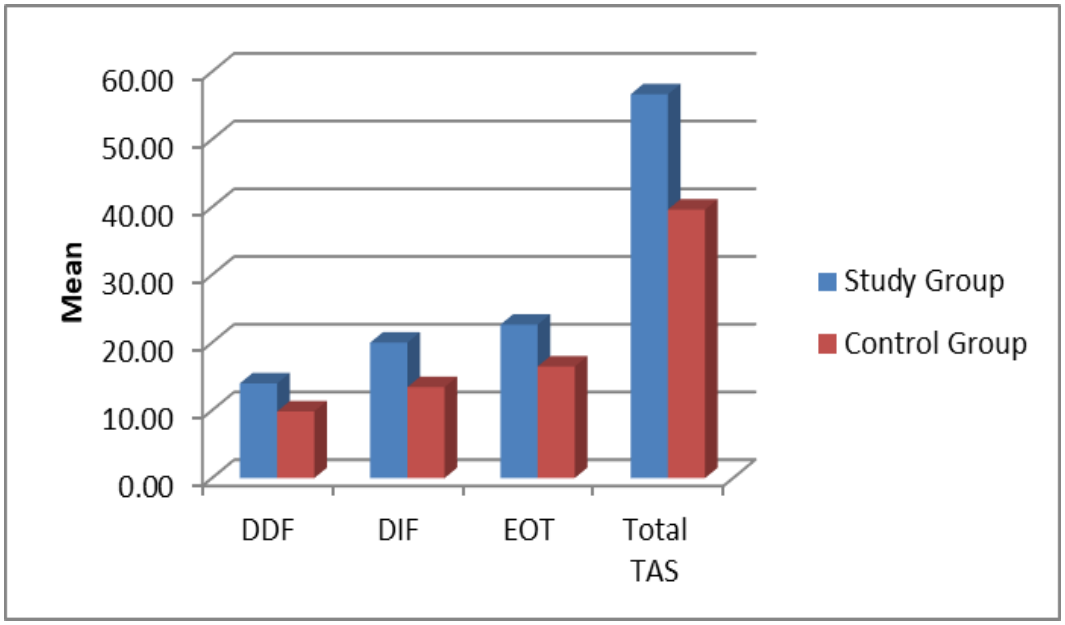


Table 17: Shows the difference between mean values of duration of illness on TAS in study group.

	DOI	N	Mean	SD	F	df	p-value
Total TAS	0-5 yr	23	42.5	14.0	28.582	2	0.01
	6-10 yr	8	61.0	18.0			
	> 10 yr	19	71.9	7.3			
	Total	50	56.7	18.5			

TAS= Toronto alexithymia scale, DOI= duration of illness

Figure 17: Shows the difference between mean values of duration of illness on TAS in study group.

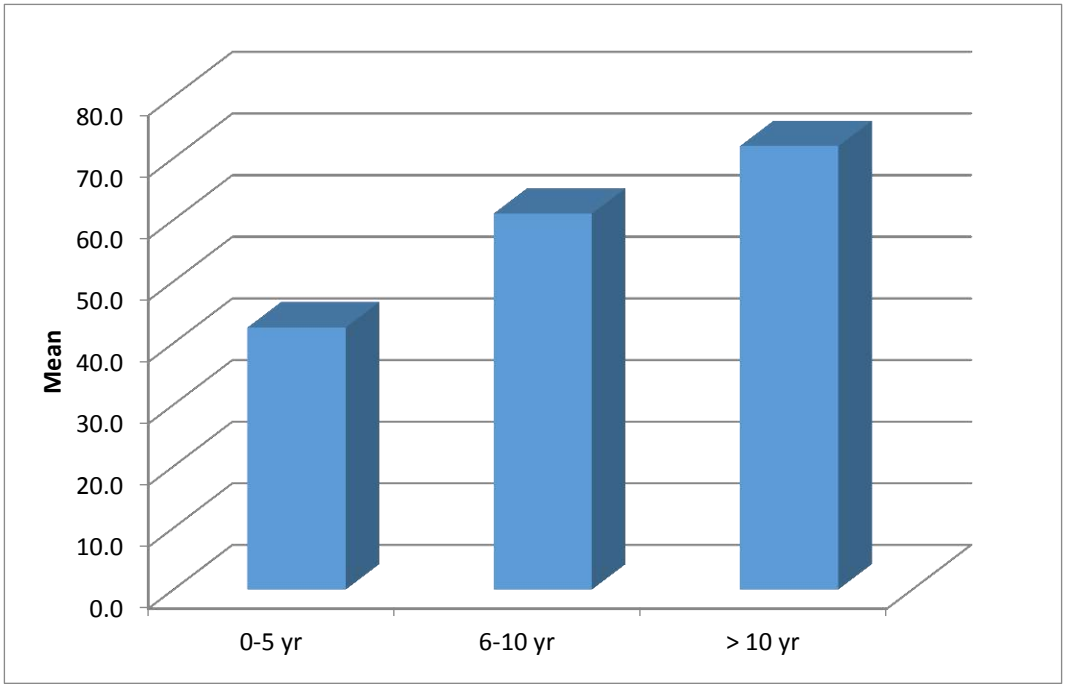


Table 18: Shows the correlation between DOI and DDF, DIF, EOT, TAS.

Spearman's rho		DDF	DIF	EOT	Total TAS
DOI (In years)	Correlation Coefficient	0.751	0.750	0.763	0.756
	p-value	0.01	0.01	0.01	0.01
	N	50	50	50	50

DOI= duration of illness, DDF= Difficulty Describing Feelings, DIF= Difficulty Identifying Feelings, EOT= Externally Oriented Thinking, TAS= Toronto alexithymia scale

Figure 18: Shows the correlation between DOI, DDF, DIF, EOT and TAS.

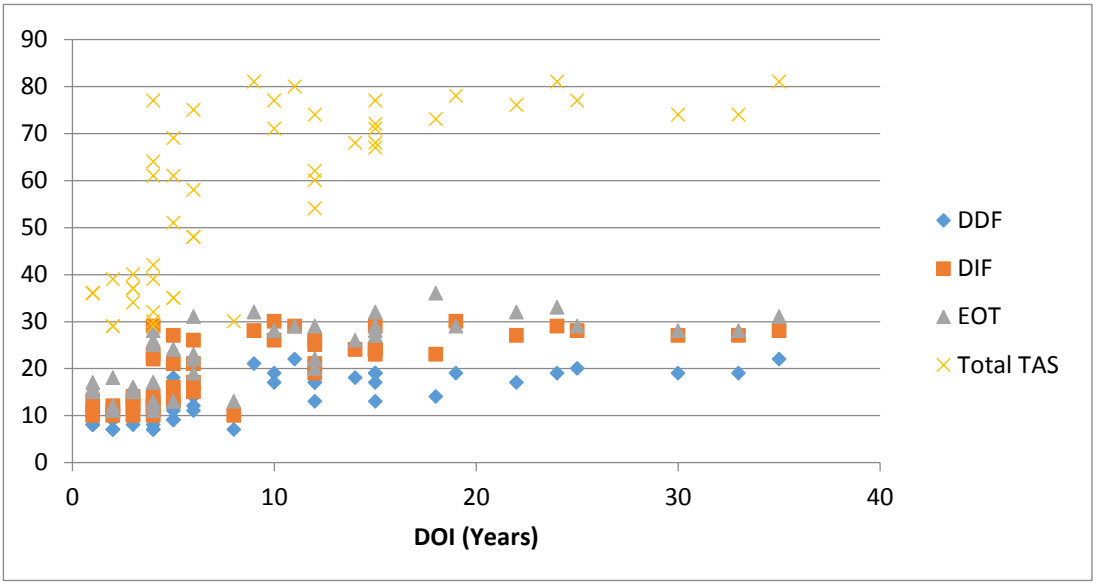


Table 19: Shows the difference between mean value on coping styles in both study and control group.

	Study Group (N=50)		Control Group (N=50)		Z	df	p-value
	Mean	SD	Mean	SD			
SELF DISTRACTION	6.10	1.39	4.48	1.39	5.833	98	0.01
DENIAL	4.48	1.59	3.48	1.43	3.300	98	0.01
SUBSTANCE USE	3.06	1.35	2.76	1.22	1.167	98	NS (0.05)
VENTING	4.80	1.31	4.10	1.40	2.579	98	0.011
SELF BLAME	2.56	0.86	2.36	0.72	1.259	98	NS (0.05)
BEH. DISENGAGE	6.00	1.12	4.66	1.22	5.704	98	0.01
EMOTIONAL SUPPORT	3.42	1.16	3.96	1.07	-2.419	98	0.017
INSTRUMENTAL SUPPORT	3.14	0.95	2.90	0.76	1.395	98	NS (0.05)
POSITIVE REFRAME	3.52	0.99	5.06	1.63	-5.693	98	0.01
PLANNING	3.44	0.91	4.28	1.03	-4.325	98	0.01
ACCEPTANCE	3.66	1.00	5.54	1.80	-6.458	98	0.01
ACTIVE COPING	3.38	0.83	4.18	1.32	-3.628	98	0.01
RELIGION	5.46	1.91	4.16	1.36	3.922	98	0.01
HUMOUR	3.28	1.03	3.30	0.81	-0.108	98	NS (0.05)

NS=Not significant

Figure 19: Shows the difference between mean value on coping styles in both study and control group.

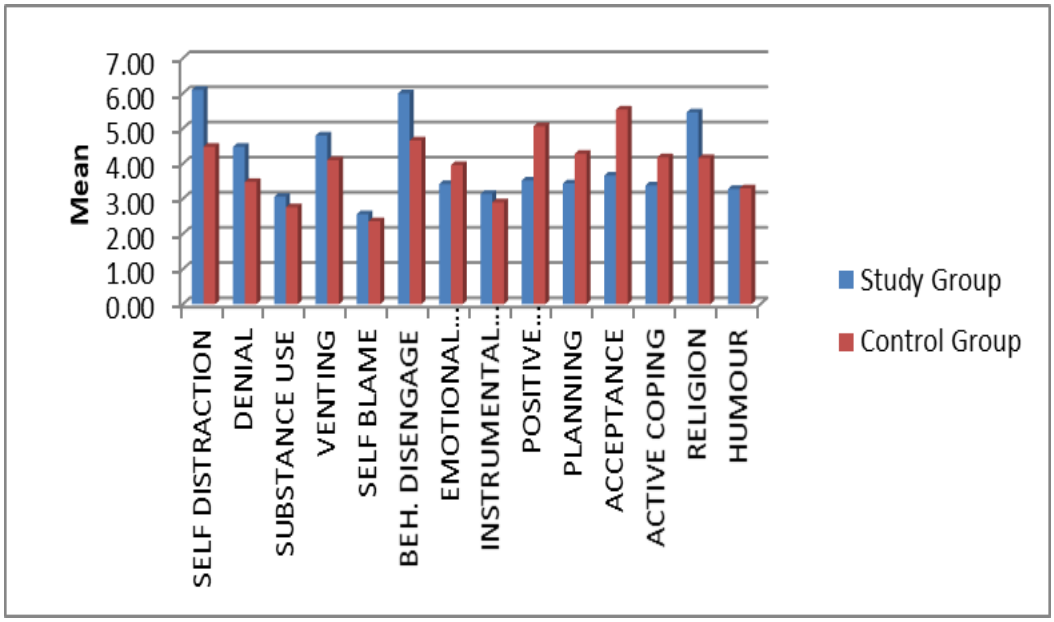


Table 20: Shows the difference between mean values of duration of illness in HADS in study group.

		N	Mean	SD	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	F	df	p-value
	DOI					Lower Bound	Upper Bound					
HADS	0-5 yr	23	21.4	6.8	1.4	18.4	24.4	13.0	37.0	18.340	2	0.01
	6-10 yr	8	28.5	7.8	2.8	22.0	35.0	12.0	36.0			
	> 10 yr	19	32.3	3.1	0.7	30.8	33.8	25.0	37.0			
	Total	50	26.7	7.7	1.1	24.5	28.9	12.0	37.0			

HADS= hospital anxiety and depression scale, DOI= duration of illness

Figure 20: Shows the difference between mean values of duration of illness in HADS in study group.

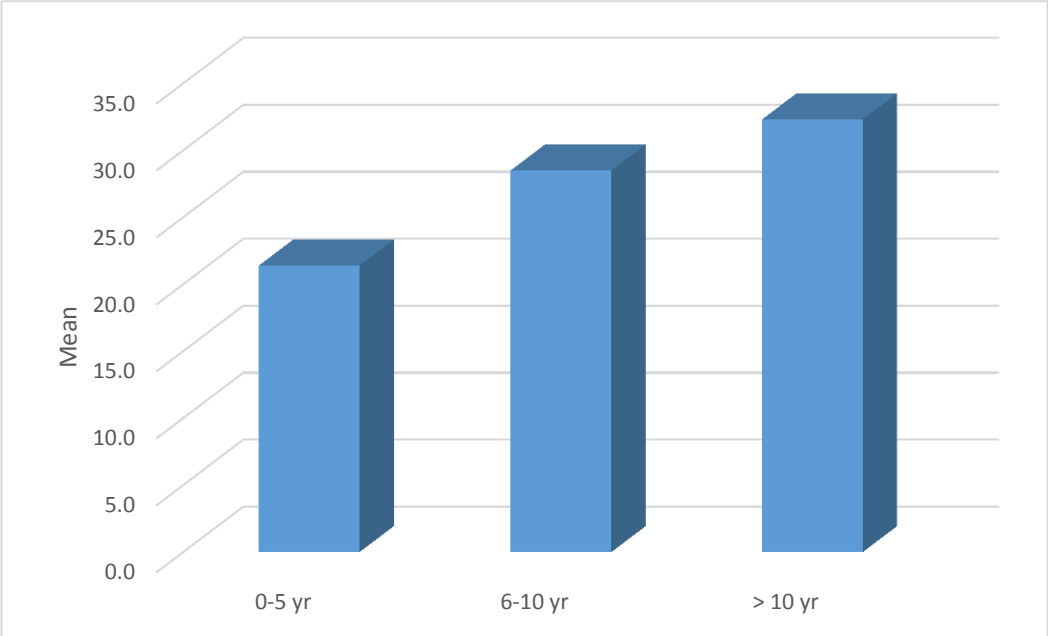


Table 21: Shows the difference between mean value on HADS in both study and control group.

	Study Group(N=50)		Control Group (N=50)		Z	df	p-value
	Mean	SD	Mean	SD			
HADS	26.68	7.70	19.56	7.58	4.659	98	0.01

HADS= hospital anxiety and depression scale

Figure 21: Shows the difference between mean value on HADS in both study and control group.

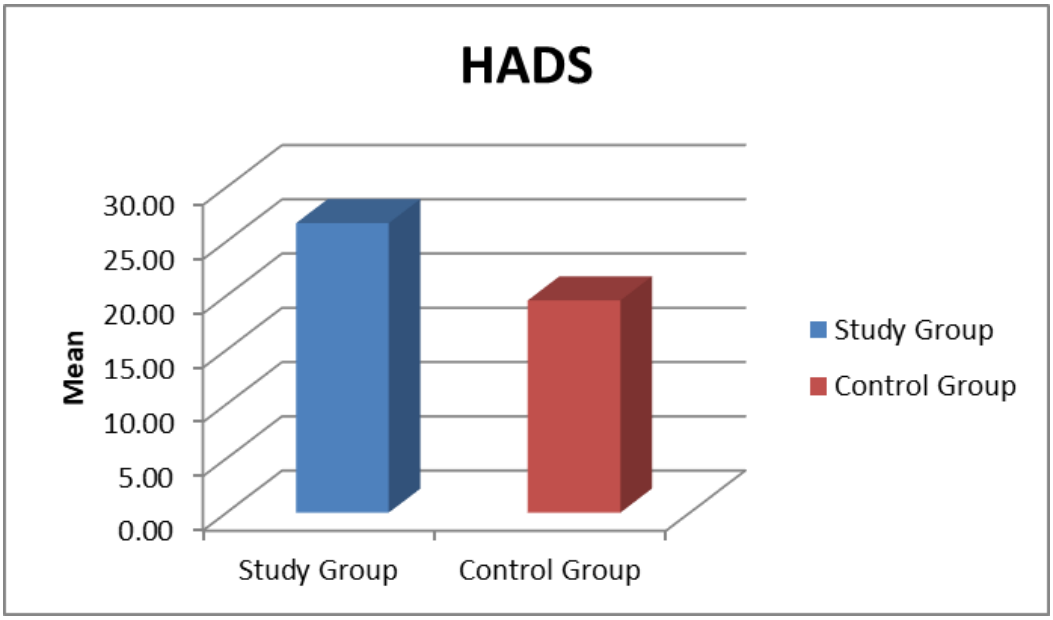


Table 22: Shows correlation between B-IPS and DDF, DIF, EOT, TAS.

Spearman's rho		DDF	DIF	EOT	Total TAS
B-IPS	Correlation Coefficient	-0.862	-0.866	-0.836	-0.875
	p-value	0.01	0.01	0.01	0.01
	N	50	50	50	50

B-IPS=brief illness perception scale, DDF= Difficulty Describing Feelings, DIF= Difficulty Identifying Feelings, EOT= Externally Oriented Thinking, TAS= Toronto alexithymia scale

Figure 22: Shows correlation between B-IPS and DDF, DIF, EOT, TAS.

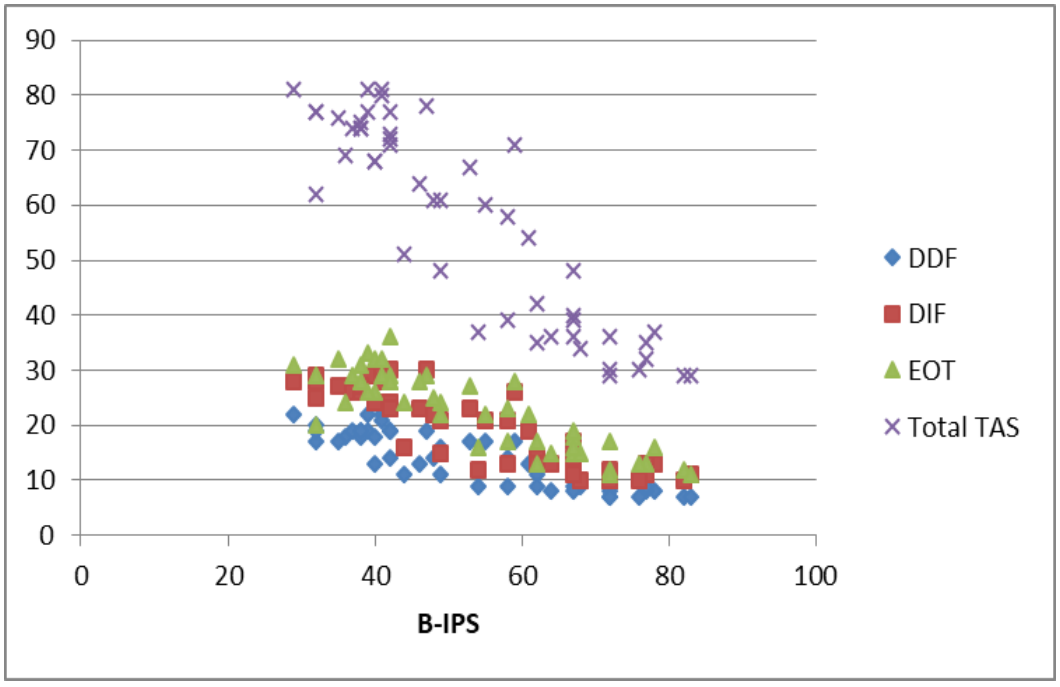


Table 23: Shows correlation between B-IPS and coping domains-self-distraction, denial, substance use and behavioral disengagement.

Spearman's rho		SELF DISTRACTION	DENIAL	SUBSTANCE USE	BEH. DISENGAGE
B-IPS	Correlation Coefficient	-0.724	-0.746	0.277	-0.537
	p-value	0.01	0.01	0.05	0.01
	N	50	50	50	50

B-IPS=brief illness perception scale

Figure 23: Shows correlation between B-IPS and coping domains-self-distraction, denial, substance-use and behavioral disengagement.

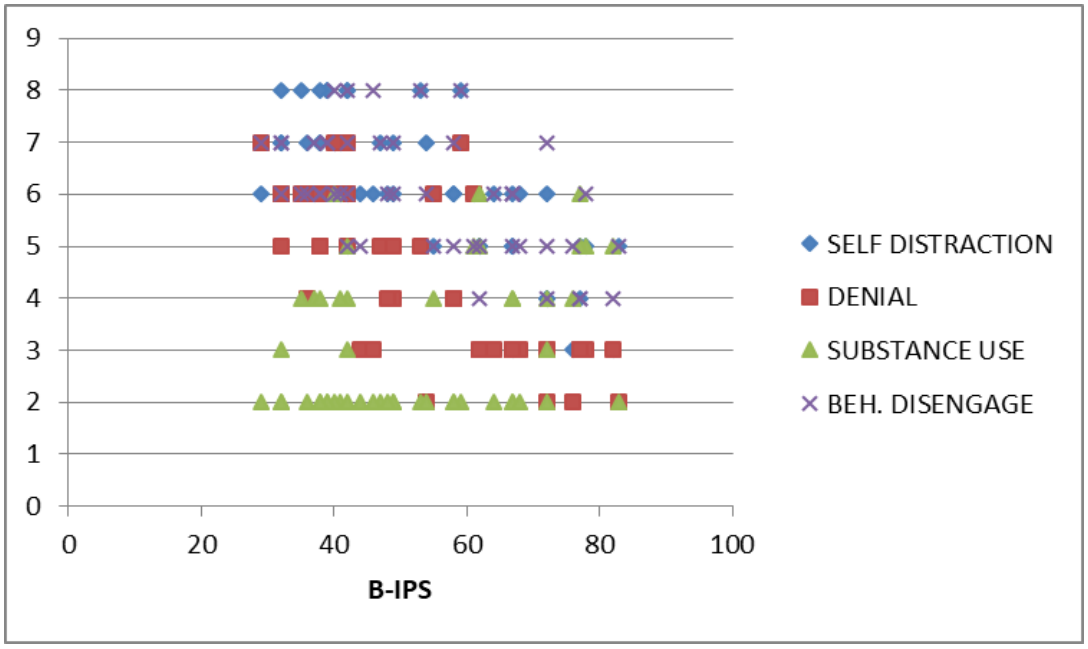


Table 24: Shows correlation between B-IPS and coping domains-instrumental support, positive reframing, planning and active coping.

Spearman's rho		INSTRUMENTAL SUPPORT	POSITIVE REFRAME	PLANNING	ACTIVE COPING
B-IPS	Correlation Coefficient	0.480	0.729	0.405	0.521
	p-value	0.01	0.01	0.05	0.01
	N	50	50	50	50

B-IPS=brief illness perception scale

Figure 24: Shows correlation between B-IPS and coping domains-instrumental support, positive reframing, planning and active coping.

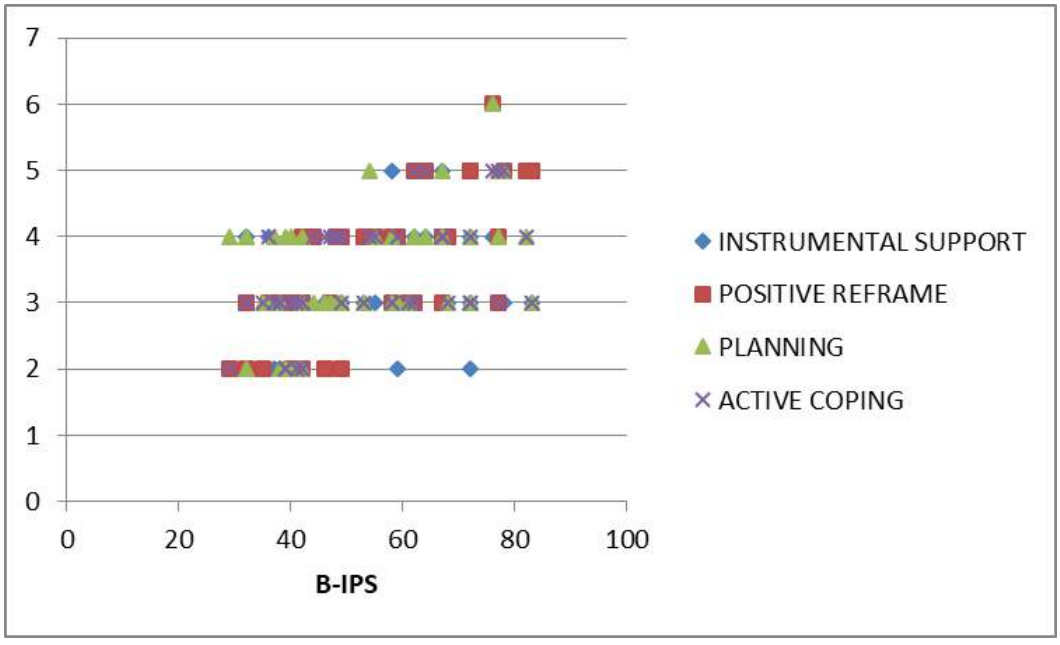


Table 25: Shows correlation between B-IPS and coping domains-venting, self-blame, emotional support, acceptance, religion and humour.

Spearman's rho		Venting	Self blame	Emotional support	Acceptance	Religion	Humour
B-IPS	Correlation Coefficient	-0.228	-0.429	0.614	0.717	-0.294	0.626
	p-value	NS (0.05)	0.02	0.01	0.01	0.05	0.01
	N	50	50	50	50	50	50

B-IPS=brief illness perception scale, NS= non significant

Figure 25: Shows correlation between B-IPS and coping domains-venting, self-blame, emotional support, acceptance, religion and humour.

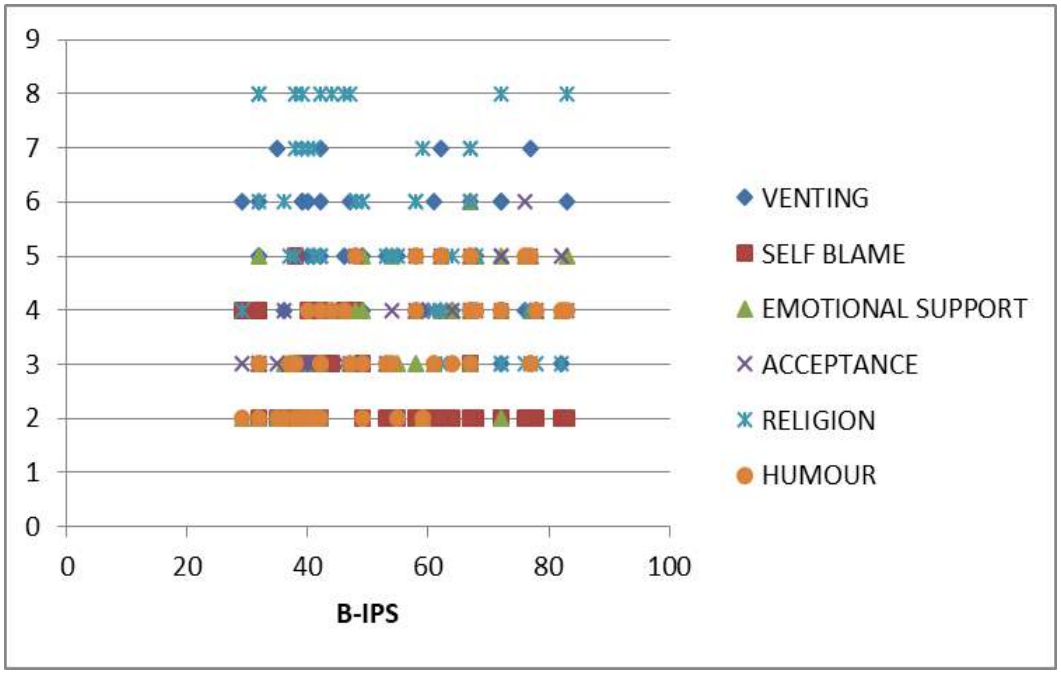


Table 26: Shows correlation between B-IPS and HADS.

Spearman's rho		HADS
B-IPS	Correlation Coefficient	-0.800
	p-value	0.01
	N	50

B-IPS=brief illness perception scale, HADS=Hospital anxiety and depression scale

Figure 26: Shows correlation between B-IPS and HADS.

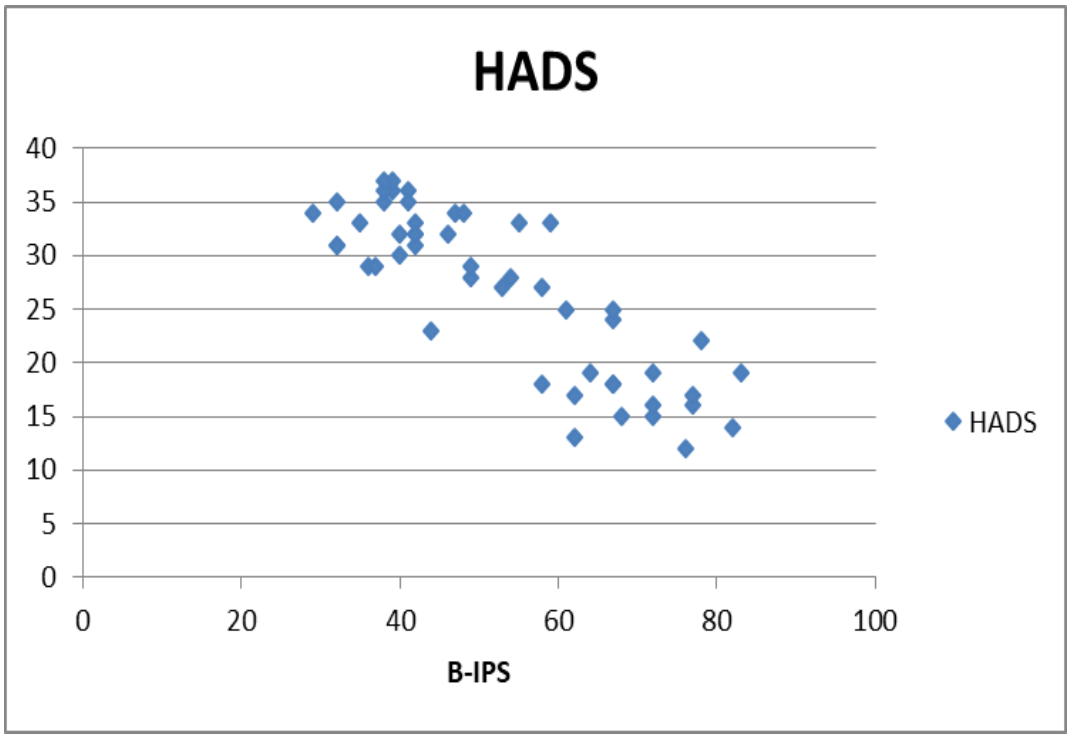


Table 27: Shows correlation between TAS and coping domains-self-distraction, denial, substance use and behavioral disengagement.

Spearman's rho		Self distraction	Denial	Substance use	Beh. Disengage
Total TAS	Correlation Coefficient	0.709	0.836	-0.230	0.606
	p-value	0.01	0.01	NS (0.05)	0.01
	N	50	50	50	50

NS= non-significant, TAS=Toronto alexithymia scale

Figure 27: Shows correlation between TAS and coping domains-self-distraction, denial, substance-use and behavioral disengagement.

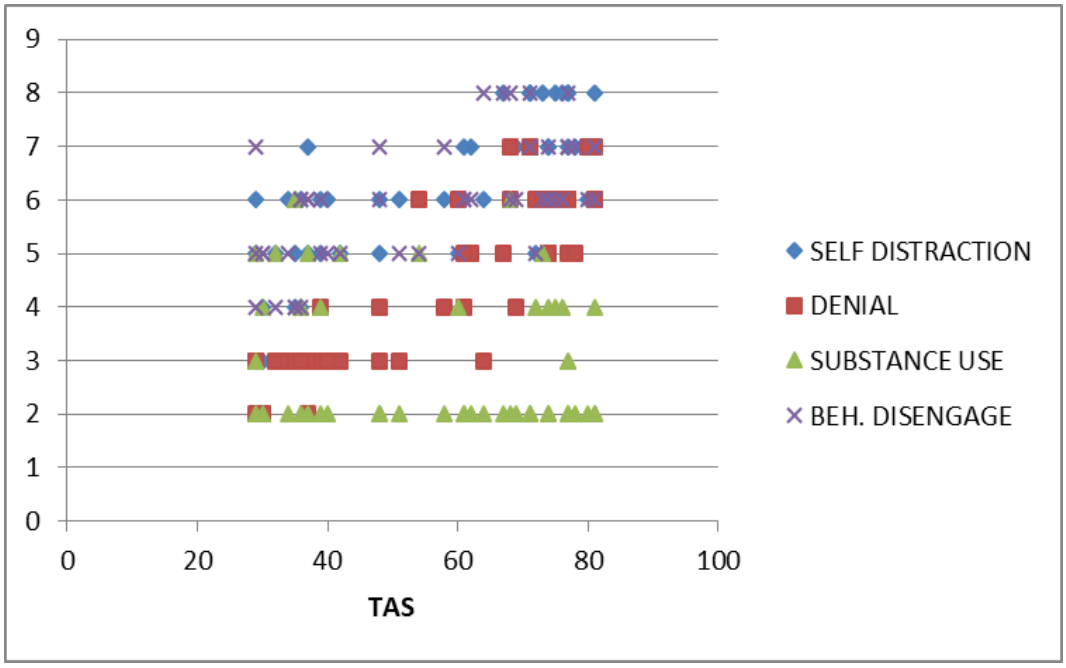


Table 28: Shows correlation between TAS and coping domains- instrumental support, positive reframing, planning and active coping.

Spearman's rho		instrumental support	positive reframe	planning	active coping
Total TAS	Correlation Coefficient	-0.579	-0.647	-0.455	-0.540
	p-value	0.01	0.01	0.01	0.01
	N	50	50	50	50

TAS=Toronto alexithymia scale, NS= non-significant

Figure 28: Shows correlation between TAS and coping domains- instrumental support, positive reframing, planning and active coping.

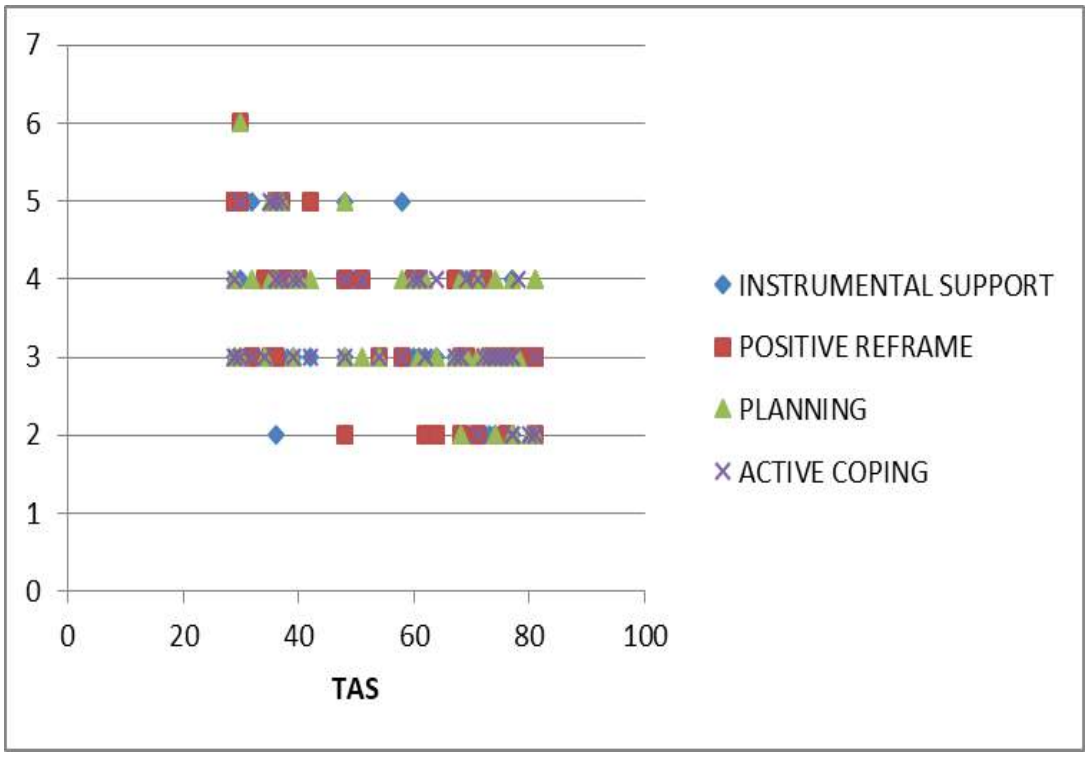


Table 29: Shows correlation between TAS and coping domains-venting, self-blame, emotional support, acceptance, religion and humour.

Spearman's rho		Venting	Self blame	Emotional support	Acceptance	Religion	Humour
Total TAS	Correlation Coefficient	0.234	0.395	-0.725	-0.739	0.295	-0.680
	p-value	NS(0.05)	0.05	0.01	0.01	0.05	0.01
	N	50	50	50	50	50	50

TAS=Toronto alexithymia scale

Figure 29: Shows correlation between TAS and coping domains-venting, self-blame, emotional support, acceptance, religion and humour.

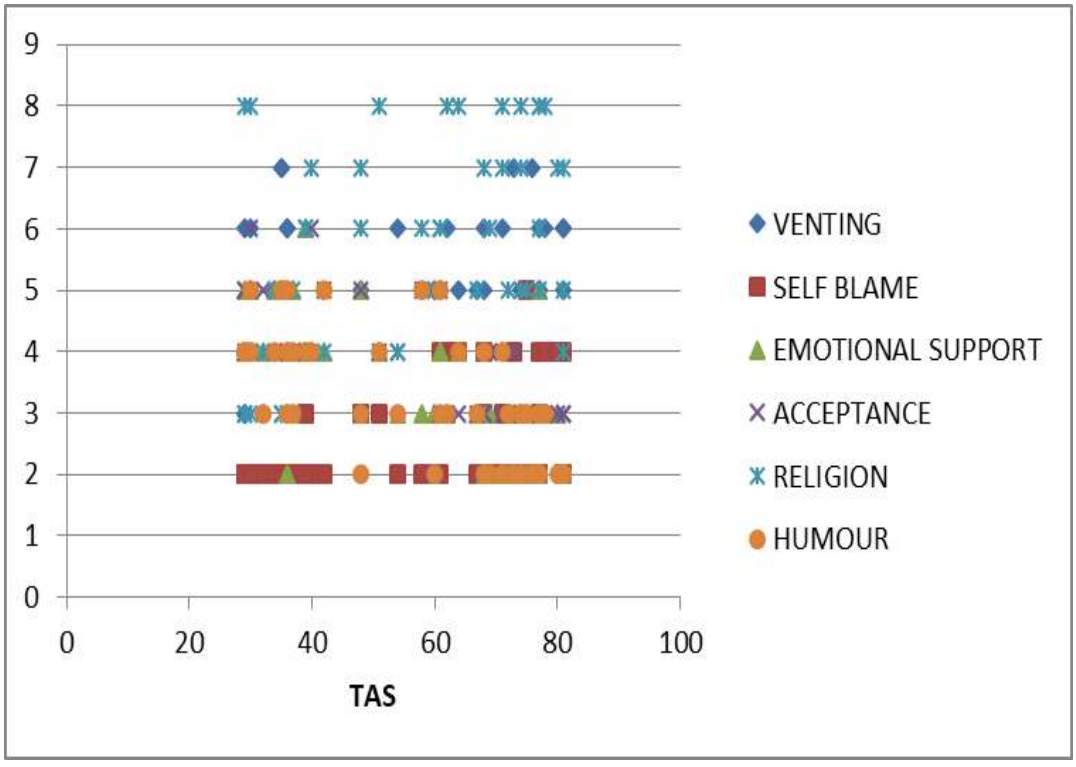


Table 30: Shows correlation between TAS and HADS.

Spearman's rho		HADS
Total TAS	Correlation Coefficient	0.895
	p-value	0.01
	N	50

TAS=Toronto alexithymia scale, HADS= hospital anxiety and depression scale

Figure 30: Shows correlation between TAS and HADS.

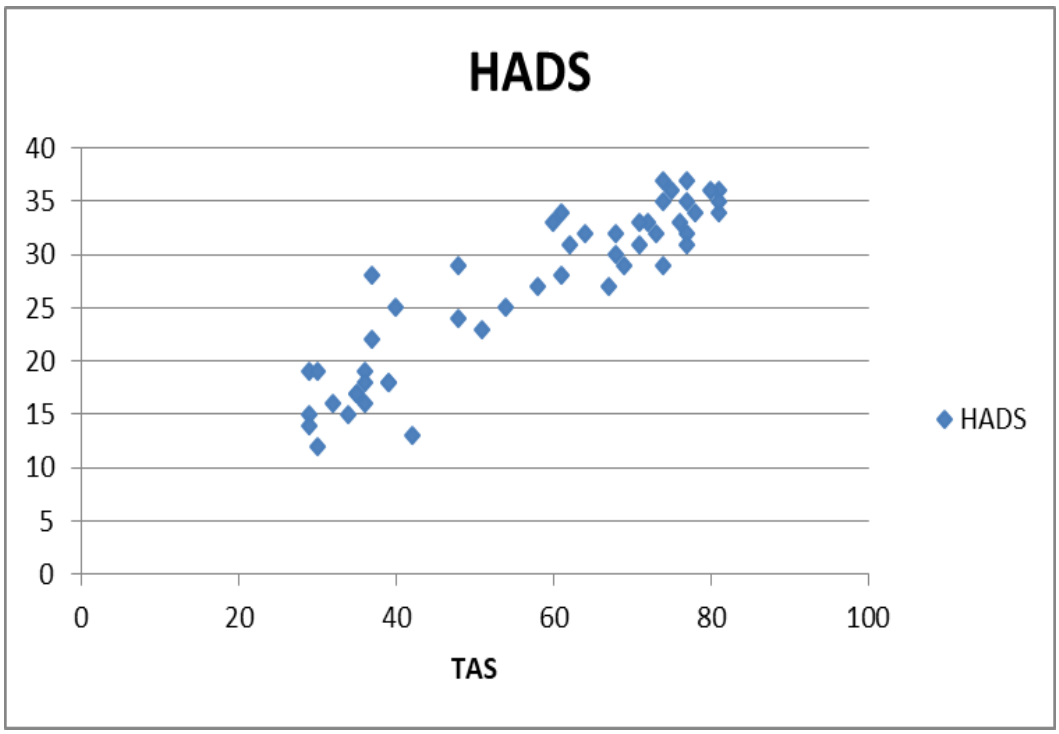


Table 31: Shows correlation between HADS and coping domains-self-distraction, denial, substance-use and behavioral disengagement.

Spearman's rho		Self distraction	Denial	Substance use	Beh. Disengage
HADS	Correlation Coefficient	0.691	0.755	-0.352	0.548
	p-value	0.01	0.01	0.05	0.01
	N	50	50	50	50

HADS= hospital anxiety and depression scale

Figure 31: Shows correlation between HADS and coping domains-self-distraction, denial, substance-use and behavioral disengagement.

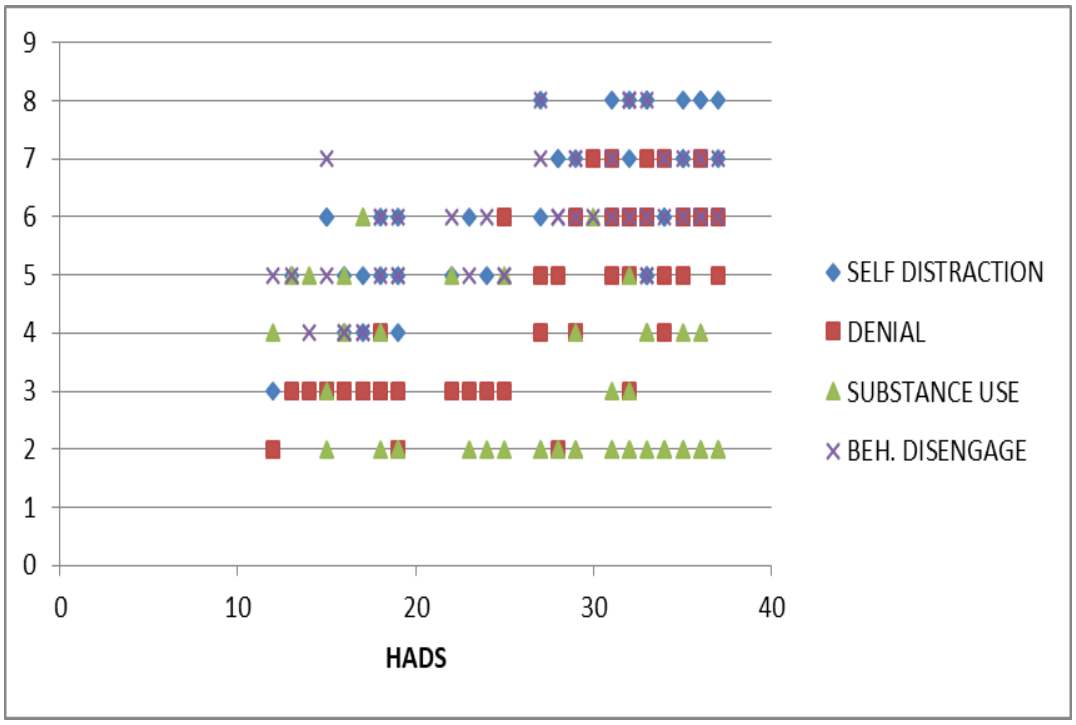


Table 32: Shows correlation between HADSand coping domains-instrumental support, positive reframing, planning and active coping.

Spearman's rho		Instrumental support	Positive reframe	Planning	Active coping
HADS	Correlation Coefficient	-0.543	-0.591	-0.527	-0.458
	p-value	0.01	0.01	0.01	0.01
	N	50	50	50	50

HADS= hospital anxiety and depression scale

Figure 32: Shows correlation between HADS and coping domains-instrumental support, positive reframing, planning and active coping.

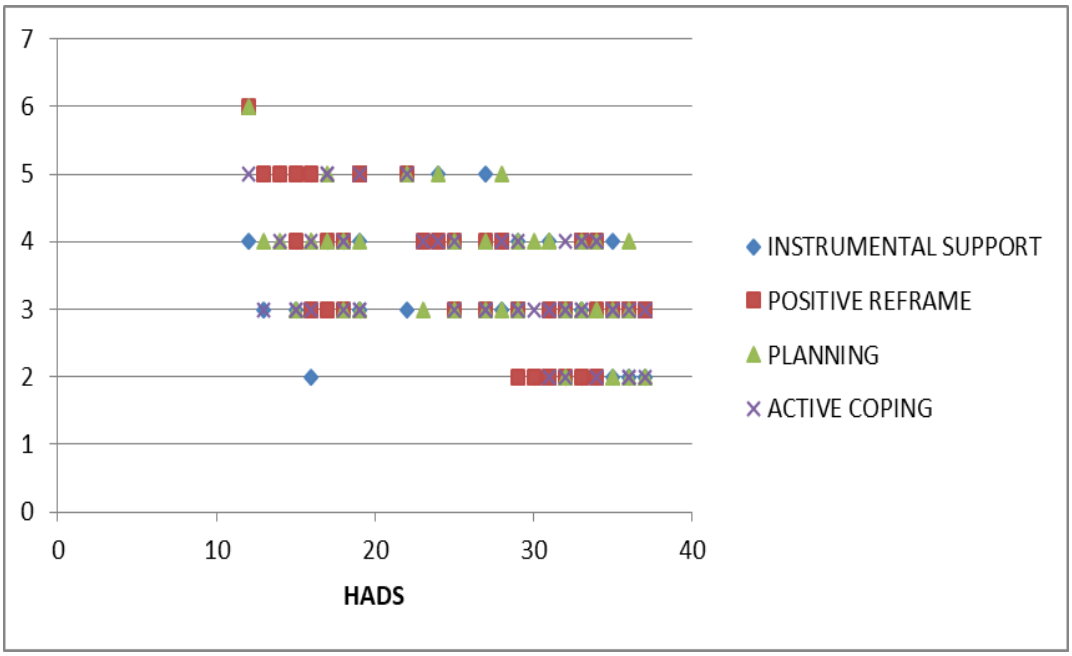
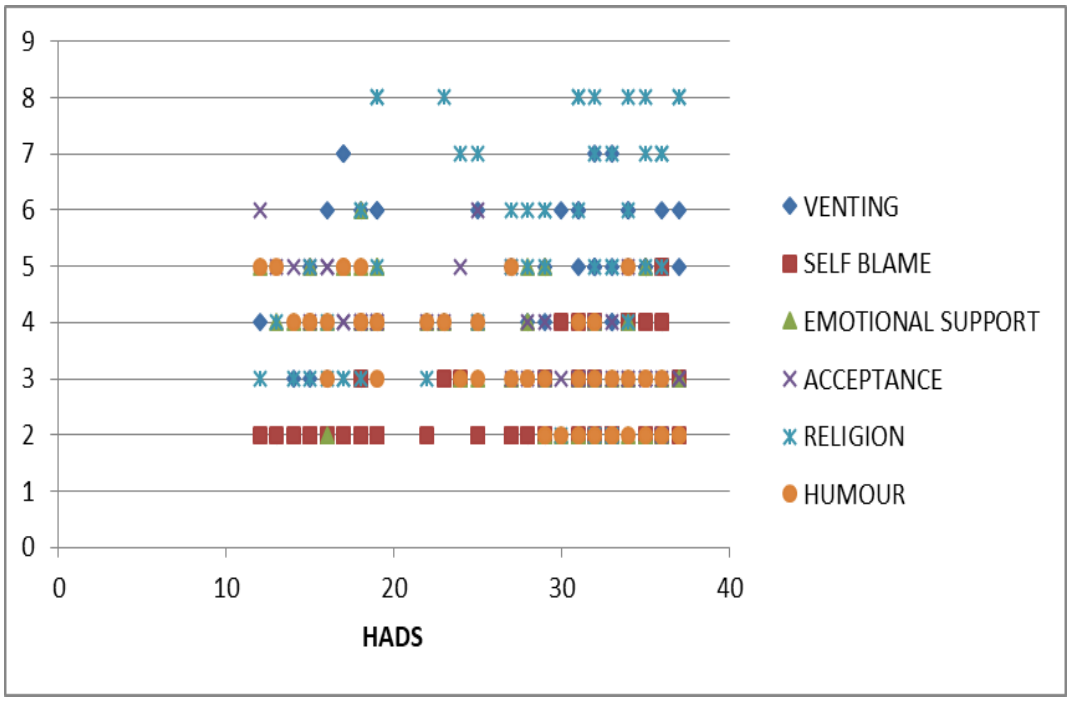


Table 33: Shows correlation between HADS and coping domains-venting, self-blame, emotional support, acceptance, religion and humour.

Spearman's rho		Venting	Self blame	Emotional support	Acceptance	Religion	Humour
HADS	Correlation Coefficient	0.281	0.448	-0.594	-0.742	0.427	-0.670
	p-value	0.05	0.01	0.01	0.01	0.05	0.01
	N	50	50	50	50	50	50

HADS= hospital anxiety and depression scale

Figure 33: Shows correlation between HADS and coping domains-venting, self-blame, emotional support, acceptance, active coping, religion and humour.



RESULTS

Table 1, figure 1 shows the age wise distribution of the study and control groups. With regards to age, majority of patients were seen in age group of 50-75 years (58%) followed by age group between 31-50 years of age(30%), <30 years of age(12%). There is a no significant difference between the two groups.

Table 2, figure 2 shows the gender-wise distribution of the study and control groups. In study group there are equal number of males and females (50%). In control group there were 54% females and 46% males. There is a no significant difference between the two groups.

Table 3, figure 3 shows the distribution of participants on the basis of qualification in study and control group, in the study group 22% are illiterate, 18% are educated upto matric, 8% are 10^{th} educated, 16% are 12^{th} educated, 22% are graduates, 14% are postgraduates. In control group, 10% are illiterate, 12% are educated upto matric, 8% are 10^{th} educated, 26% are 12^{th} educated, 30% are graduates, 14% are postgraduates. There is a no significant difference between the two groups.

Table 4, figure 4 shows the distribution of participants on the basis of occupation in study and control group. In the study group 40% are unemployed, 14% are farmer, 12% are student, 6% are skilled worker, 2% are shopkeeper, 18% are professionals, 8% are others. Whereas, in control group, 34% are unemployed, 8% are farmer, 20% are student, 14% are skilled worker, 4% are shopkeeper, 20% are professionals, 8% are others. There is a no significant difference between the two groups.

The table 5, figure 5 shows the distribution of participants in terms of marital status in study and control group. In the study group 84% are married and 16% are unmarried. Whereas, in control group, 72% are married and 28% are unmarried. There is a no significant difference between the two groups.

Table 6, figure 6 shows the distribution of participants in terms of locality/region in study and control group. In the study group and control group 38% and 46% are respectively from a rural background. Whereas, 62% and 54% are respectively from urban background. There is a no significant difference between the two groups.

Table 7 figure 7 shows the distribution of participants on the basis of socio-economic status in study and control group. In the study group 6% are upper class, 40% are upper middle, 30% are lower middle and 24% are upper lower. Whereas, in control group, 10% are upper class, 52% are upper middle, 24% are lower middle and 14% are upper lower. There is a no significant difference between the two groups.

Table 8, figure 8 show the difference between mean values in terms of duration of illness in B-IPS. In 0-5 years, (M=62.8, SD=13.8), 6-10 years (M=53.8, SD=13.6) and for > 10 years (M=40.8, SD=8.3). The results depicts significant difference, f= 17.655, p value= 0.01.

Table 9, figure 9 shows correlation between DOI and B-IPS – with Spearman's rho correlation, results depict a negative correlation between DOI and B-IPS (r= -0.729, p= 0.01).

Table 10, figures 10 shows the difference of mean value on Illness perception on the basis of gender in study group. Our results exhibit that in males (M=56.16, SD=16.970) and in females (M= 49.80, SD=13.429), z= -1.469, p-value= NS (0.05). There is no significant difference between the gender on illness perception.

Table 11, figures 11 shows the difference of mean value on Illness perception on the basis of locality/region in study group. Our results exhibit that in urban region (M=59.39, SD=14.639) and in rural region (M= 42.53, SD=10.453), z= -4.376, p-value= 0.01. There is no significant difference on illness perception on the basis of locality/region.

Table 12, figures 12 shows the difference of mean value on Illness perception in terms educational qualification in study group. Our results exhibit mean and standard deviation in different educational groups is

significantly different. In PG (M=71.86, SD=9.008), graduate (M= 62.82, SD=15.741), 12th (M= 58.13, SD=10.063), 10th (M= 51.00, SD=6.218253), upto metric(M= 38.89, SD=5.372), in illiterates(M= 39.64, SD=4.388), F= 15.734, p-value= 0.01. There is significant difference on illness perception in terms educational qualification.

Table 13, figures 13 shows the difference of mean value on Illness perception in terms occupation in study group. Our results exhibit mean and standard deviation in different occupational groups is significantly different. In students (M=72.17, SD=2.949), in professionals (M= 66.11, SD=12.673), in skilled workers (M= 60.33, SD=10.017), in others (M= 54.25, SD=17.500), in unemployed(M= 45.75, SD=10.376), in farmers(M= 36.43, SD=4.860), F= 10.179, p-value= 0.01. There is significant difference on illness perception in terms occupation.

Table 14 and figures 14 shows the difference of mean value on Illness perception in terms socio-economic status in study group. Our results exhibit mean and standard deviation in different socio-economic groups is significantly different. In upper class (M=70.67, SD=10.970), in upper middle (M= 65.10, SD=11.539), in lower middle (M= 41.20, SD=6.930) and in upper lower (M= 43.08, SD=10.308), F= 23.717, p-value= 0.01. There is significant difference on illness perception in terms socio-economic status.

Table 15, figure 15 shows the distribution of participants of study and control group on the basis of alexithymia scores. A score <51, indicates non alexithymia, a score between 52-60 indicates possible alexithymia and a score >61 indicating alexithymia. In the study group, 42% of cases scored <51, 6% scored 52-60 and 52% scored >61. Whereas, in control group, 76% of cases scored <51, 12% scored 52-60 and 12% scored >61. There is a significant difference between the two groups (0.01).

Table 16, figures 16 shows the comparison between the study and control groups on the basis of DDF, DIF, EOT and TAS. Our results exhibit that study group (M=13.98, SD=4.98) is significantly higher on DDF than

control group (M= 9.84, SD=3.04), z= 5.015, p-value= 0.01. On DIF, the study group (M=20.00, SD=7.07) is significantly higher than control group (M= 13.42, SD=5.53), z=5.186, p=0.01. On EOT, the study group (M=22.66, SD=7.10) is significantly higher than control group (M= 16.48, SD=5.80), z=4.765, p=0.01. On TAS, the study group (M=56.66, SD=18.49) is significantly higher than control group (M= 39.64, SD=14.11), z=5.176, p=0.01.

Table 17, figure 17 show the difference between mean values in terms of duration of illness on TAS. In 0-5 years, (M=42.5, SD=14.0), 6-10 years (M=61.0, SD=18.0) and for > 10 years (M=71.9, SD=7.3). The results depicts significant difference, f= 28.582, p value= 0.01.

Table 18, figure 18 shows correlation between DOI and DDF, DIF, EOT, TAS– with Spearman's rho correlation. Our results depict a positive correlation between DOI and DDF (r= 0.751, p= 0.01), DOI and DIF (r= 0.750, p= 0.01), DOI and EOT (r= 0.763, p= 0.01) and DOI and TAS (r= 0.756, p= 0.01).

Table 19 and figures 19 shows the comparison between the study and control groups on the basis of coping styles. Our results exhibit that study group (M=6.10, SD=1.39) is significantly higher on self-distraction than control group (M= 4.48, SD=1.39), z= 5.833, p-value= 0.01. On Denial, the study group (M=4.48, SD=1.59) is significantly higher than control group (M= 3.48, SD=1.43), z=3.300, p=0.01. On substance use, the study group (M=3.06, SD=1.35) is not significantly higher than control group (M= 2.76, SD=1.22, z=1.167, p=0.246. On venting, the study group (M=4.80, SD=1.31) is higher than control group (M= 4.10, SD=1.40), z=2.579, p=0.05. On self-blame, the study group (M=2.56, SD=0.86) is not significantly higher than control group (M= 2.36, SD=0.72), z=1.259, p=0.211. On self-blame, the study group (M=2.56, SD=0.86) is not significantly higher than control group (M= 2.36, SD=0.72), z=1.259, p=0.211. On behavioral disengagement, the study group (M=6.00, SD=1.12) is significantly higher than control group (M= 4.66, SD=1.22),

z=5.704, p=0.001. On emotional support, control group (M= 3.96, SD=1.07) is higher than the study group (M=3.42, SD=1.16) z=-2.419, p=0.05. On instrumental support, study group (M= 3.14, SD=0.95) is higher than the study group (M=2.90, SD=0.76) z=-1.395, with NS (0.05). On positive reframing, control group (M= 5.06,

SD=1.63) is significantly higher than the study group (M=3.52, SD=0.99) z=-5.693, p=0.01. On planning, control group (M= 4.28, SD=1.03) is significantly higher than the study group (M=3.44, SD=0.91) z=-4.325, p=0.01. On active coping, control group (M= 4.18, SD=1.32) is significantly higher than the study group (M=3.38, SD=0.83) z=-3.628, p=0.01. On acceptance, control group (M= 5.54, SD=1.80) is significantly higher than the study group (M=3.66, SD=1.00) z=--6.458, p=0.01. On humour, control group (M= 3.30, SD=0.81) is not significantly higher than the study group (M=3.28, SD=1.03) z=-0.108, NS=0.05. On religion, the study group (M=5.46, SD=1.91) is significantly higher than control group (M= 4.16, SD=1.36), z=3.922, p=0.01.

Table 20, figure 20 show the difference between mean values in terms of duration of illness on HADS. In 0-5 years, (M=21.4, SD=6.8), 6-10 years (M=28.5, SD=7.8) and for > 10 years (M=32.3, SD=3.1). The results depicts significant difference, f= 18.340, p value= 0.001.

Table 21, figures 21 shows the comparison between the study and control groups in terms of HADS. Our results exhibit that study group (M=26.68, SD=7.70) is significantly higher on HADS than control group (M= 19.56, SD=7.58), z= 4.659, p-value= 0.01.

Table 22 and figure 22 shows correlation between B-IPS, DDF, DIF, EOT and TAS – with Spearman's rho correlation. Our results depict a negative correlation between B-IPS and DDF (r= -0.862, p= 0.01), B-IPS and DIF (r= -0.866, p= 0.01), B-IPS and EOT (r= -0.836, p= 0.01) and B-IPS and TAS (r= -0.875, p= 0.01).

Table 23 and figure 23 shows correlation between B-IPS, self-distraction, denial, substance-use and behavioral disengagement- with Spearman's

rho correlation. Our results depict a negative correlation between B-IPS and self-distraction (r= -0.724, p= 0.01), B-IPS and denial (r= -0.746, p= 0.01), B-IPS and behavioral disengagement (r= --0.537, p= 0.01) and no significant relationship between B-IPS and substance-use (r= 0.277, p= 0.05).

Table 24 and figure 24 shows correlation between B-IPS, instrumental support, positive reframing, planning and active coping- with Spearman's rho correlation. Our results depict a positive correlation between B-IPS and instrumental support (r= 0.480, p= 0.01), B-IPS and positive reframing (r= 0.729, p= 0.01), B-IPS and planning (r= 0.405, p= 0.05) and B-IPS and active coping (r= 0.521, p= 0.01).

Table 25 and figure 25 shows correlation between B-IPS, venting, self-blame, emotional support, acceptance, active coping, religion and humour. Our results depict a negative correlation between B-IPS and venting (r=-0.228, p=NS (0,05), B-IPS and self-blame (r= -0.429, p= 0.05), B-IPS and religion (r= -0.294, p= 0.05) and positive correlation between B-IPS and emotional support (r= 0.614, p= 0.01), B-IPS and acceptance (r= 0.717, p= 0.001), B-IPS and humour (r= 0.626, p= 0.01).

Table 26 and figure 26 shows correlation between B-IPS and HADS. Our results depict a negative correlation between B-IPS and HADS (r=-0.800, p= 0.01).

Table 27 and figure 27 shows correlation between TAS, self-distraction, denial, substance-use and behavioral disengagement- with Spearman's rho correlation. Our results depict a positive correlation between TAS and self-distraction (r= 0.709, p= 0.01), TAS and denial (r= 0.836, p= 0.01), TAS and behavioral disengagement (r= 0.606, p= 0.01) and no significant relationship between TAS and substance-use (r= -0.230, p= NS (0.05).

Table 28 and figure 28 shows correlation between TAS, instrumental support, positive reframing, planning and active coping- with Spearman's rho correlation. Our results depict a negative correlation between TAS and instrumental support (r= -0.579, p= 0.01), TAS and positive reframing (r= -

0.647, p= 0.01), TAS and planning (r= -0.455, p= 0.01) and TAS and active coping (r= -0.540, p= 0.01).

Table 29 and figure 29 shows correlation between TAS, venting, self-blame, emotional support, acceptance, active coping, religion and humour. Our results depict a negative correlation between TAS and emotional support (r=-0.725, p NS(0.05), TAS and acceptance (r= -0.739, p= 0.01), TAS and humour (r= -0.680, p= 0.05), positive correlation between TAS and self-blame (r= 0.395, p= 0.004), TAS and religion (r= 0.295, p= 0.05) and no significant relationship between TAS and venting (r= 0.234, p=NS(0.05).

Table 30 and figure 30 shows correlation between TAS and HADS. Our results depict a positive correlation between TAS and HADS (r=0.895, p= 0.01).

Table 31 and figure 31 shows correlation between HADS, self-distraction, denial, substance-use and behavioral disengagement- with Spearman's rho correlation. Our results depict a positive correlation between HADS and self-distraction (r= 0.691, p= 0.01), HADS and denial (r= 0.755, p= 0.01), HADS and behavioral disengagement (r= 0.548, p= 0.01) and negative relationship between HADS and substance-use (r= -0.352, p= 0.05).

Table 32 and figure 32 shows correlation between HADS, instrumental support, positive reframing, planning and active coping- with Spearman's rho correlation. Our results depict a negative correlation between HADS and instrumental support (r= -0.543, p= 0.01), HADS and positive reframing (r= -0.591, p= 0.01), HADS and planning (r= -0.527, p= 0.01) and HADS and active coping (r= -0.458, p= 0.01).

Table 33 and figure 33 shows correlation between HADS, venting, self-blame, emotional support, acceptance, active coping, religion and humour. Our results depict a negative correlation between HADS and emotional support (r=-0.594, p= NS (0.05), HADS and acceptance (r=-0.742, p= 0.01), HADS and humour (r= -0.670, p= 0.01), positive correlation

between HADS and self-blame (r= 0.448, p= 0.01), HADS and religion (r= 0.427, p= 0.02), HADS and venting (r= 0.281, p= 0.05).

DISCUSSION

The present study was conducted with an aim to explore the relationship between illness perception, alexithymia, coping styles and psychological distress in asthma patients. In order to fulfil our aim, the study was conducted. A total of 100 subjects (50 individual diagnosed and undergoing treatment for Asthma and 50 healthy control group) of age range 18 to 75 years participated in the study. The patients with asthma were selected from inpatient and outpatient department of Chest of Dayanand Medical College & Hospital, Ludhiana. The healthy control subjects were selected from general population.

SOCIODEMOGRAPHIC CORRELATES

AGE

With regards to age, majority of patients were seen in age group of 50-75 years (58%) followed by age group between 31-50 years of age(30%), <30 years of age(12%). There is a no significant difference between the two groups.

GENDER

In our study, the distribution of males and females were equal in study group, 50% of the patients were males and 50% of patients were females. This findings of gender difference in asthma patients supports the literature reported by Dursun AB et al 2014. [94]

EDUCATION QUALIFICATION

With regards to education qualification, in the study group 22% are illiterate, 18% are educated upto matric, 8% are 10^{th} educated, 16% are 12^{th} educated, 22% are graduates, 14% are postgraduates. Dursun AB et al (2014), [94] shows that 55.8% of patients were educated upto middle school, 22.7% from high school, and 14% from university, which shows asthma is more prevalence in patients who lack of education. Williams MV et al (1998), inadequate literacy was strongly correlated with poorer knowledge of asthma and thus poor asthma control. These findings are

not in corroboration to our results which shows that there was no significance difference related to asthma due to levels of education.

OCCUPATION

With regards to occupation, in study group 40% are unemployed, 14% are farmer, 12% are student, 6% are skilled worker, 2% are shopkeeper, 18% are professionals, 8% are others. There no significance difference on the basis of occupation in asthma in study and control group. This findings do not support the literature done by Agrawal S et al (2014), [92] which shows that men in the plant and machine operators and assemblers, mining, construction, manufacturing and transport have the highest risk of asthma. Farming and agricultural work, painting, plastic manufacturing, and cleaning are also high risk occupations for the development of asthma. (8)

MARITAL STATUS

In our study, the distribution of married and unmarried was 84% and 16%respectively in study group. Compared to unmarried, there were more married patients in the study.

BACKGROUND

In our study 62% of the asthma patients were from urban background and 38% of the patients from rural background. Since the present study was conducted in a tertiary care hospital, which caters largely to the urban population, the pre-ponderance of more subjects from urban locality is understandable. This findings supports the literature reported by Kozyrskyj AL et al (2004) [86] which showed rural patients were less likely to have asthma than urban patients. Our results are in the line with the previous study of Lawson JA et al 2011 which concludes that asthma prevalence was lowest in rural regions.

SOCIO-ECONOMIC STATUS

In this study 6% patients are from upper class, 40% are from upper middle, 30% from lower middle and 24% from upper lower. As reported by Kumar P et al (2017), [94] prevalence rate asthma was higher in lower

socioeconomic status. These findings are not in corroboration to our results which shows that there was no significance difference related to asthma in terms of socio-economic status.

To fulfil this aim we had four main objectives:

1. To assess Illness Perception in individuals diagnosed with asthma.
2. To assess and compare alexithymia in individuals diagnosed with Asthma and healthy individuals.
3. To assess and compare coping styles in individuals diagnosed with Asthma and healthy individuals.
4. To assess and compare psychological distress in individuals diagnosed with Asthma and healthy individuals.
5. To find the relationship between illness perception, alexithymia, coping styles and psychological distress in individuals diagnosed with asthma.

Illness Perception in asthma patients

Our study shows the significant difference between mean values in terms of duration of illness, the mean value is significantly higher in >10 years of duration in comparison 0-5 years and 6-10 years. Study depicts the negative correlation between DOI and B-IPS – with Spearman's rho correlation, (r= -0.729), which shows that as duration of illness increases in asthma patients (severity of asthma increases) [96] their cognitive appraisal and personal understanding of a medical condition and its potential consequences becomes poor. Patients with less duration of asthma have a better understanding of their illness and who believe in their power to control their asthma showed greater improvements in asthma control and are adherent to treatment. These findings supports the literature reported by Achstetter et al (2019). [99]

On the basis of gender, the results in our study reveal no significant difference between males and in females on illness perception. A study by Jessop DC et al (2003) [96] shows that females believed that they had

asthma and thought that their asthma could be cured and/or controlled thus have more illness perception and have more adherence to treatment. These findings are not in corroboration to our results indicating no significance difference on the basis of gender.

On the basis of locality our study shows significant difference on illness perception in asthma patients on the basis of locality/region in study group with mean value higher in urban region in comparison to rural region. However, there has not been much literature showing impact of locality/region on illness perception. The current study's findings add to this gap in literature.

Our study shows that there is a significant difference in terms educational qualification on illness perception. There is higher means scores in post graduates, graduates, 12^{th} and 10^{th} grade in comparison to one's educated upto metric and illiterates, which indicates that patients with asthma who have more years of education have better understanding of their illness, have better adherence to treatment and thus more control on their asthma symptoms. Our current study findings adds to gap in literature on impact of education qualification on illness perception.

On the basis of occupation there is a significance difference on Illness perception in study group. Mean and standard deviation in different occupational groups is significantly different as our study shows, the mean scores is higher in students, in professionals, in skilled workers in comparison to unemployed and farmers. However, there has been less literature showing impact of occupation on illness perception in asthma patients. The current study's findings add to this gap in literature.

Our results indicates that there is significant difference on illness perception in terms socio-economic status in asthma patients. The findings of our study indicates that socioeconomic status has an impact on the illness perception in asthma patients. Patients with higher socio-economic class have more opportunity for education and occupation thus more understanding of their illness. Patients with low socioeconomic

status are more likely to have worse self-reported health problems due to lack of education and thus poor understanding of their illness resulting in lower life expectancy. Merely, research were conducted on knowing the impact of socio-economic status on illness perception. Therefore, the current study's findings add to this gap in literature.

ALEXITHYMIA IN ASTHMA PATIENTS

Our results indicates that alexithymia is significantly higher in study group in comparison to control group. In the study group, 52% of patient scored >61 score on TAS scale while only 12% in control group. Our results also depicts that there is a significant difference between the two groups, as study group is significantly higher on DDF than control group indicating asthma patients have difficulty describing their feeling to others. The score on DIF was also significantly higher which means that patients with asthma has difficulty identifying their feelings and distinguishing between these feelings and bodily sensations of emotional arousal. The high EOT score in our study group, depicts that asthma patients has a stimulus bound, externally oriented, cognitive style and has constricted imaginal processes. Findings of our current study also shows that asthma patients have high score on total TAS, reveals that patients with asthma has high alexithymia. This findings supports the literature reported by *Baiardini, et.al (2011)*[107] *which shows that out of 115* asthmatic *patients* 19% had obtained TAS-20 score ≥ 61 indicating high alexithymia scores in asthma patients.

Duration of illness and alexithymia

The findings of our study depicts a significant difference in terms of duration of illness on TAS with highest mean value in duration of > 10 years. The results also reveals a positive correlation between DOI and DDF, DIF, EOT, TAS which shows that as duration of illness increases, the scores of DOI, DDF, DIF, EOT and TAS will tend to increase. Thus, with increasing age and increasing duration of illness, asthma severity increases resulting in higher alexithymia scores in asthma patients. Our

results are supported by a study of König P et al (1999) [85] which shows that asthma duration is associated asthma severity. Our results are in the line with the previous study on alexithymia by Chugg K et al (2009) [104] illustrating higher alexithymia scores in moderate to severe asthma patients.

COPING STYLES IN ASTHMA PATIENTS

In our study we observed higher mean value (6.10) of self-distraction domain in asthma patient as compared to control groups (4.48) with significant difference. Indicating the use of self-distraction coping strategy in asthma patients. With shows that asthma patients have a tendency to divert their attention away from stressful occurrence by engaging in some pleasurable activities such as watching tv, reading, playing without immediately confronting the situation. However, there has been less literature showing self -distraction as a coping strategy in asthma patients. The current study's findings add to this gap in literature.

On domain of denial higher mean value of (4.48) in patient as compared to control groups (3.48) with significant difference. This findings depicts that asthma patients refuses to believe that the problem exists and try to act as if their problem is not real. The use of denial as a coping strategy significantly predicted less reporting of their symptoms resulting in poor asthma control. The finding are in concordance with another study by Barton C et al 2003 [111] which reported denial was most commonly used by asthma patients.

On domain of behavioural disengagement higher mean value of 6.00 in patient as compared to control groups (4.66) with significant difference. The results indicates that asthma patients lowers one's efforts to deal with the stressor or abandoning attempts to achieve goals that causes stress. These results are supported by the study conducted by Nazarian D et al (2006) [113]

Results depicts significant difference on religion with mean value of (5.46) in study group in comparison to (4.16) in control group which shows that

asthma patient have more tendency to turn to religion in terms of stress. Since the present study was conducted on Indian population, the pre-ponderance of more subjects using religious coping is understandable. Most of population of our country is a part of some religious community, which gives people a sense of belonging and provides an important source of social support. Thus, during the stressful time people turns to religion.

A significant difference was found on planning, active coping, positive reframing and acceptance. The results depicts mean value of control group is higher on these dimensions of coping in comparison to study group which indicates that asthma use less problem-focused coping styles which involves addressing the problem causing distress and actions taken to eliminate the stress factor or reduce its impact like making a plan of action or concentrating on the next step.

The results of our study shows no significant difference on substance use, venting, self- blame, instrumental support and humour, N.S. at 0.05 in study and control group.

PSYCHOLOGICAL DISTRESS IN ASTHMA PATIENTS

In the present study, our results depict that psychological distress is significantly higher in asthma patients (study group) as compared to control group which further signifies that the prevalence of anxiety and depression was significantly higher among asthma patients. On the basis of our result findings we can conclude that having a potentially chronic illness increases the possibility of anxiety and depressive symptoms in asthma patients. Our results are in accordance with the study done by Di Marco et al 2010 [119] showing a significant correlation between a poor level of asthma control and higher prevalence of anxiety and depression which are frequent disorders in asthmatic subjects.

Relationship between Illness perception and alexithymia

Our results indicates that a significant negative correlation between B-IPS and DDF, DIF, EOT, TAS. The asthma patients in our study group with

poor illness perception have difficulty describing their feeling, difficulty identifying their feelings and have less tendency to focus their attention externally. Our findings supports the literature reported by Larsen MH et al (2017) [108] showing alexithymic patients reported worse illness perception. This study was not conducted on asthma patients. Further research is required into these relationships in asthma patients.

Relationship between Illness perception and coping styles

The results of our study depicts negative correlation between illness perception and self-distraction, illness perception and denial, illness perception and behavioral disengagement- with Spearman's rho correlation. No significant relationship was found between illness perception and substance-use with p value>0.05. The above results indicates that asthma patients with poor illness perception uses more avoidant focused coping styles such as self-distraction, denial and behavioral disengagement.

In our present study, the results indicates that there is a positive correlation between illness perception and instrumental support, positive reframing, planning and active coping with Spearman's rho correlation. Thus, on the basis of above results we can conclude that asthma patients with high perception about their illness uses more problem focused coping styles such as instrumental support, positive reframing, planning and active coping than patients with poor illness perception. They use problem-focused strategies to deal with the cause of their problem by finding out information on their problem and learning new skills to manage the problem which is aimed at changing or eliminating the source of the stress. Asthma patients with poor illness perception has less tendency to use problem focused coping styles. Our results are in concordance with the study given by Tiemensma J et al (2016) [116] which shows that patients with better understanding of illness utilized more proactive coping strategies. Our findings are also supported by Hagger, M. S.,et.al 2003

[118] study which shows that perceived controllability of the illness was significantly associated with problem-focused coping strategies.

Our results exhibit that there is negative correlation between illness perception and self-blame, illness perception and religion. On the basis of these findings it can be depicted that the patients with high perception about their illness would have less tendency to blame oneself for their illness outcomes and would have less tendency to turn to religion in terms of stress. In contrary, asthma patients with poor perception about their illness has more tendency to criticize/blame themselves for their problems and would find more comfort in religious or spiritual beliefs/praying or meditating.

A positive correlation exists between illness perception and emotional support, illness perception and acceptance, illness perception and humour. The above results indicates that asthma patients with high illness perception seeks more emotional support, they have more tendency to accept the reality of their problems and makes attempts to deal with their stressors. They would making jokes/making fun on the situation and try to see their problems in more positive lights. In contrary, asthma patients with poor illness perception seeks less emotional support from others, would less likely to accept their problems. There is no significant correlation between illness perception and venting coping style.

Relationship between illness perception and psychological distress

Our results depict a negative correlation between illness perception and psychological distress (r=-0.800). The findings of our study reveals that the asthma patients with worse perception of their illness, have more negative consequences of the disease, worse understanding of symptoms and has poor clinical control. They have worse health related quality of life with more psychological distress and more symptoms of anxiety and depression. Our results are well supported by Silva ST et al (2022) [102] showing worse illness perception have more likely to anxiety and depressive symptoms.

Relationship between alexithymia and coping styles

The results of the present study shows that there is a positive correlation between alexithymia and self-distraction, alexithymia and denial, alexithymia and behavioral disengagement- with Spearman's rho correlation. The above results depicts that high score in alexithymia is related to more use of avoidant coping styles in asthma patients. There is more likelihood of engaging in some other pleasurable activities for diverting from their problem. They have more tendency to deny their problems. There is no significant correlation between alexithymia and substance use. The finding supports the literature reported by Amore M et al 2013 [115] which shows that in asthma patients, higher alexithymia was associated with more frequent use of maladaptive coping strategies.

Our results indicates that a significant negative correlation between alexithymia and instrumental support, alexithymia and positive reframing, alexithymia and planning, alexithymia and active coping. The above results depicts that high score in alexithymia is related to less use of problem focused coping styles in asthma patients. Patients with high alexithymia has less tendency to seek social support for practical and instrumental reasons like seeking help, advice or knowledge, have less tendency for taking steps in their problem solving and doesn't try to look at their problems in positive lights. This finding support the literature reported by Parker JD et al (1998) [41] showed severe alexithymia are less able to carry out adaptive coping strategies.

Our findings establish a positive correlation between alexithymia and self-blame, alexithymia and religion. In asthma patients with high alexithymia score have more likelihood to use blame and criticize themselves for problems and more tendency to use religious coping styles in times of stress. There is no significant relationship between alexithymia and venting. Results depicts negative correlation between alexithymia and emotional support, alexithymia and acceptance and alexithymia and humour. Their likelihood to seek social support for practical and

instrumental reasons like seeking help, advice or knowledge is less, have less tendency to accept their problems and seek help and seems everything in negative lights.

Relationship between alexithymia and psychological distress

Our present study shows a positive correlation between alexithymia and psychological distress. The results depicts that alexithymia is closely associated with psychological distress. The patients with high alexithymia scores have more depressive and anxiety symptoms. Our results are in concordance with the study of Amore M et al 2013 [119] which shows alexithymia was significantly associated with the severity of depression and anxiety symptoms ($p < .01$).

Relationship between psychological distress and coping styles

Current study depicts a positive correlation between psychological distress and self-distraction, psychological distress and denial, psychological distress and behavioral disengagement- with Spearman's rho correlation. The findings indicates more avoidant coping styles are used by asthma patients with psychological distress. They are more likely to deny their problems, would not confront their problems and has tendency to distract themselves from problems being faced by them and makes less efforts to deal with their problems. Our results on more use of Behavioral Disengagement coping styles in asthma patients with psychological distress is in concordance with study by Beyhan Sagmen, S et al 2020 [123] showing its more prevalence in patients with anxiety and depression.

Our results reveal significant negative correlation between psychological distress and instrumental support, positive reframing, planning, active coping. This results reveals less tendency of asthma patients to use problem focused coping styles which aims to remove or reduce the cause of the stressors and tackle the problems.

Asthma patients with psychological distress have less proneness to seek help or advice, they have more inclination towards seeing things in

negative lights. They have less tendency to take proactive steps and finding ways to alleviate their problems. This was in concordance with study conducted by Ana Stoilkova et al shows that asthma patients with symptoms of anxiety and/or depression reported a lower use of active confronting coping style and an increased use of avoidance and passive reaction pattern coping style. Our results on less use of planning coping styles in asthma patients with psychological distress is not in concordance with study by Beyhan Sagmen, S et al 2020[123] planning were the leading coping strategies in all asthmatics.

According to our findings there is a positive correlation between psychological distress and self-blame, psychological distress and religion, psychological distress and venting. The patients with psychological distress uses more emotion focused coping styles to alleviate distress by minimizing, reducing, or preventing the emotional components of their problems. The result depicts that they have more self-blaming tendencies and would use religious coping strategies during stressful situations. Our study found a negative correlation between psychological distress and acceptance as they have more tendency to deny their problems rather than accepting them. No significant correlation between psychological distress and emotional support. Our results on use of religion coping styles in asthma patients with psychological distress is supported by Beyhan Sagmen, S et al 2020 [127] turning to religion were the leading coping strategies in all asthmatics.

However, there has not been much literature showing relationship between illness perception and coping styles, alexithymia and use of different coping styles and types of coping styles used by asthma patients with psychological distress. The current study's findings add to this gap in literature.

LIMITATIONS OF THE STUDY

This study was a hospital based and the findings may not be generalised to the entire population of patients with asthma. The sample size of the

study population was small. The study relied completely on the self-reported measures. In spite the good reliability and validity of the questionnaires used, there is probability that participants might have felt lethargic while filling all the questionnaires together and thereby not attempting the questionnaires with full attention. A standardized tool was not used to assess the severity of asthma. The patients were not categorised into different types of pulmonary disease.

SUMMARY & CONCLUSION

The current study was conducted in the department of chest Dayanand Medical College & Hospital, Ludhiana on subjects diagnosed with Asthma (N=50) and healthy control groups (N=50) with the same socio-demographic data. The subjects were drawn from both inpatient and outpatient department of chest who were diagnosed with asthma. Study group was assessed on Illness perception. Both the groups were assessed on alexithymia, Brief-Cope Scale and Hospital Anxiety-Depression Scale. GHQ-12 was assessed on only control group. The data was then analyzed and following conclusions were reached-

- Among the patients (58%) were seen in age group of 50-75 years, followed by (30%), patients were among age group between 31-50 years of age and (12%) with less than <30 years of age. There is a no significant difference between the two groups.
- Among the patients 50% were males and 50% were females.
- 22% of patients were illiterate, 18% were educated upto matric, 8% were 10^{th} educated, 16% were 12^{th} educated, 22% were graduates, 14% were postgraduates.
- 40% of patients were unemployed, 14% were farmer, 12% were student, 6% were skilled worker, 2% were shopkeeper, 18% were professionals, 8% were others.
- 84% patients were married, 16% were unmarried
- 62% of the patients were from urban background and 38% of the patients from rural background.
- 6% patients were from upper class, 40% were from upper middle, 30% were from lower middle and 24% were from upper lower.
- Illness perception is significantly higher in 0-5 years, 6-10 years in comparison to >10 years.
- Negative correlation between duration of illness and illness perception.

- There is no significant difference between males and in females on illness perception.
- Significant difference on the basis of locality/region on illness perception.
- Significant difference in terms educational qualification on illness perception.
- Significant difference on the basis of occupation on Illness perception.
- Significant difference in terms socio-economic status on illness perception.
- Alexithymia is significantly higher in study group in comparison to control group.
- Significant difference in terms of duration of illness on alexithymia (TAS).
- Significant difference on DDF,DIF, EOT AND TAS in both study and control group.
- Significant difference in mean values of duration of illness on TAS in study group.
- Positive correlation between DOI and DDF, DIF, EOT, TAS.
- Significant difference on coping styles in both study and control group.
- Significant difference between duration of illness in HADS in study group.
- Significant difference on psychological distress in study and control group.
- Negative correlation between illness perception and DDF, DIF, EOT, TAS.
- Significant correlation between B-IPS and self-distraction, denial, and behavioral disengagement.
- No correlation between illness perception and substance use.

- Significant correlation between illness perception and instrumental support, positive reframing, planning and active coping.
- Negative correlation between illness perception and venting, self-blame, religion.
- Positive correlation between illness perception and emotional support, acceptance, humour.
- Negative correlation between illness perception and psychological distress.
- Positive correlation between alexithymia (TAS) and self-distraction, denial, and behavioral disengagement.
- No correlation between alexithymia and substance-use.
- Negative correlation between alexithymia (TAS) and instrumental support, positive reframing, planning, active coping.
- Negative correlation between alexithymia (TAS) and emotional support, acceptance, humour.
- Positive correlation between alexithymia (TAS) and self-blame, religion.
- No correlation between alexithymia (TAS) and venting.
- Positive correlation between alexithymia (TAS) and psychological distress (HADS).
- Positive correlation between psychological distress (HADS) and self-distraction, denial, behavioral disengagement.
- Negative correlation between psychological distress (HADS) and substance use.
- Negative correlation between psychological distress (HADS) and instrumental support, positive reframing, planning, active coping.
- Negative correlation between psychological distress (HADS) and emotional support, acceptance, humour.
- Positive correlation between psychological distress (HADS) and venting, self-blame, religion.

To conclude the present study suggested that patients with asthma showed poor illness perception with high alexithymia scores and maladaptive coping strategies and symptoms of depression & anxiety compared to healthy control group.

Illness perception, alexithymia, coping strategies and clinical correlates/psychological distress are an important area of study in asthma. The goal of assessing these domains is that the individuals could receive appropriate psychological therapies including relaxation exercise and JPMR, psycho-education can be given for making them aware about their clinical condition and role of treatment adherence. Cognitive behavioral therapy and problem solving therapy can be planned to complement pharmacological therapy and have the best opportunity to recover. The findings of the present study indicate that there is a significant correlation among illness perception, alexithymia, coping strategies and psychological distress in asthma patients. These domains could be potential targets for therapeutic intervention. The improvements in these domains may lead to a better daily functioning in patients suffering from asthma.

FUTURE DIRECTIONS

The existing data suggest that asthma patients have poor illness perception, high alexithymia and employ maladaptive coping strategies with presence of depressive and anxiety symptoms. Future studies should consider population based longitudinal studies that can address the question of whether all pulmonary diseases can lead to poor illness perception and high alexithymia. Different dimensions of illness perception could be studied as well to analyse their significant effect on alexithymia and consequently its association with the employed coping strategies and psychological distress. Future research can evaluate illness perception, alexithymia, coping strategies and psychological distress by applying therapeutic intervention to see the pre and post phase which would help us to go beyond the treatment of just asthma symptoms itself.

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KEY TO MASTER CHART

B-IPS	Brief Illness Perception Scale
DDF	Difficulty Describing Feelings
DIF	Difficulty Identifying Feelings
DOI	Duration of illness
EOT	Externally Oriented Thinking
GHQ-12	General health questionnaire
HADS	Hospital Anxiety Depression Scale
LM	Lower middle
SES	Socio-economic status
TAS-20	Toronto Alexithymia Scale
UM	Upper middle
U	Upper
UL	Upper lower

S.no	Name	MRD NO.	GROUP	Age	Sex	Education	Occupation	marital status	Urban/rural	SES	DOI (In years)	B-IPS	DDF	DIF	EOT	Total TAS	TAS GROUP	SELF DISTRACTION	DENIAL
1	SK	801911	1	53	F	upto metric	unemployed	married	rural	LM	5	36	18	27	24	69	3	7	4
2	BS	1151524	1	40	M	graduate	professional	married	urban	UM	10	42	19	30	28	77	3	6	5
3	AG	1234546	1	69	M	graduate	farmer	married	urban	LM	35	29	22	28	31	81	3	6	7
4	AG	445706	1	63	M	12th	shopkeeper	married	urban	LM	15	53	17	23	27	67	3	8	5
5	TS	980111	1	27	F	PG	student	unmarried	urban	UM	2	67	9	12	18	39	1	5	3
6	MS	1233274	1	23	M	graduate	professional	unmarried	rural	UM	4	72	7	10	12	29	1	6	3
7	SK	1228699	1	74	F	upto metric	unemployed	married	rural	LM	12	32	17	25	20	62	3	7	5
8	RS	1200577	1	36	M	upto metric	farmer	married	rural	LM	15	42	19	24	29	72	3	5	6
9	NM	458582	1	53	F	10th	unemployed	married	urban	LM	5	44	11	16	24	51	1	6	3
10	LR	1231646	1	47	F	graduate	unemployed	married	urban	U	6	58	14	21	23	58	2	6	4
11	SV	1182885	1	37	M	PG	professional	unmarried	urban	UM	12	55	17	21	22	60	2	5	6
12	SD	1181883	1	60	F	upto metric	unemployed	married	urban	LM	15	32	19	29	29	77	3	8	6
13	PS	695940	1	25	M	PG	student	unmarried	urban	UM	3	78	8	13	16	37	1	5	3
14	SS	1124247	1	72	M	illiterate	farmer	married	rural	UL	12	37	19	26	29	74	3	6	6
15	GRS	246819	1	54	M	12th	other	married	urban	UL	10	59	17	26	28	71	3	8	7
16	KK	1212058	1	52	F	illiterate	unemployed	married	rural	LM	19	47	19	30	29	78	3	7	5
17	GC	1212056	1	60	M	illiterate	farmer	married	rural	UL	25	32	20	28	29	77	3	7	6
18	RD	1195194	1	45	F	12th	unemployed	married	urban	UM	6	67	12	17	19	48	1	5	3
19	RS	1240972	1	75	M	illiterate	unemployed	unmarried	rural	UL	24	39	19	29	33	81	3	8	6
20	PM	891731	1	68	M	graduate	professional	married	urban	UM	12	61	13	19	22	54	2	6	6
21	PL	1229538	1	68	F	10th	unemployed	married	urban	UM	3	54	9	12	16	37	1	7	2
22	VD	1227047	1	48	M	graduate	professional	married	urban	UM	4	62	11	14	17	42	1	5	3
23	BK	863724	1	57	F	illiterate	unemployed	married	rural	UL	11	41	22	29	29	80	3	6	7
24	PK	49050	1	53	F	upto metric	unemployed	married	rural	LM	33	38	19	27	28	74	3	7	5
25	VK	1208512	1	31	F	12th	unemployed	married	rural	UL	3	67	11	14	15	40	1	6	3
26	SL	820410	1	63	F	10th	unemployed	married	urban	UM	4	58	9	13	17	39	1	6	4
27	HK	1154497	1	37	M	graduate	professional	married	urban	U	4	77	8	11	13	32	1	5	3
28	RK	1226213	1	66	F	illiterate	unemployed	married	urban	UM	14	40	18	24	26	68	3	7	6
29	SD	1126343	1	77	F	illiterate	unemployed	married	urban	LM	4	39	22	29	26	77	3	8	6
30	PK	52283	1	47	F	upto metric	unemployed	married	rural	LM	5	49	16	21	24	61	3	7	5
31	SK	1199306	1	53	F	graduate	skilled worker	married	urban	UM	1	64	8	13	15	36	1	6	3
32	RM	1233308	1	28	F	12th	skilled worker	married	urban	UL	6	49	11	15	22	48	1	6	4
33	KD	1227056	1	60	F	illiterate	unemployed	married	rural	UL	15	42	19	24	28	71	3	8	7
34	MK	1186751	1	50	F	10th	unemployed	married	urban	LM	4	48	14	22	25	61	3	6	4
35	Gk	228392	1	50	F	12th	skilled worker	married	urban	UM	3	68	9	10	15	34	1	6	3
36	S	863722	1	52	F	illiterate	unemployed	married	urban	LM	4	46	13	23	28	64	3	6	3
51	LK	165765	1	19	M	12th	student	unmarried	urban	UM	5	62	9	13	13	35	1	5	3
38	R	1233084	1	45	M	graduate	other	married	urban	U	5	77	9	13	13	35	1	4	3
39	SS	658279	1	36	M	graduate	student	unmarried	urban	UM	2	82	7	10	12	29	1	3	3
40	SR	854514	1	77	F	upto metric	farmer	married	rural	UL	6	38	18	26	31	75	3	8	6
41	MS	428287	1	70	M	PG	professional	married	urban	UM	8	76	7	10	13	30	1	3	2
42	S	1228689	1	57	M	12th	other	married	rural	UL	15	40	13	24	32	68	3	7	7

S.no	Name	MRD NO.	SUBSTANCE USE	VENTING	SELF BLAME	BEH. DISENGAGE	EMOTIONAL SUPPORT	INSTRUMENTAL SUPPORT	POSITIVE REFRAME	PLANNING	ACCEPTANCE	ACTIVE COPING	RELIGION	HUMOUR	HADS	GHQ-12
1	SK	801911	2	4	2	6	3	4	3	3	4	4	6	2	29	-
2	BS	1151524	3	5	2	8	2	2	3	2	2	2	5	3	32	-
3	AG	1234546	2	6	4	7	2	2	2	4	3	2	4	2	34	-
4	AG	445706	2	5	2	8	3	3	4	3	3	3	5	3	27	-
5	TS	980111	4	3	3	6	6	4	4	4	4	4	6	4	18	-
6	MS	1233274	3	3	2	7	4	4	5	3	5	3	3	4	15	-
7	SK	1228699	2	6	4	6	3	3	2	4	3	3	8	3	31	-
8	RS	1200577	4	4	2	5	2	3	4	3	2	3	5	3	33	-
9	NM	458582	2	4	3	5	4	4	4	3	4	4	8	4	23	-
10	LR	1231646	2	5	2	7	3	5	3	4	5	3	6	5	27	-
11	SV	1182885	4	5	2	5	3	3	4	4	2	4	5	2	33	-
12	SD	1181883	2	5	4	7	5	4	3	2	3	3	8	3	35	-
13	PS	695940	5	4	2	6	4	3	5	5	4	5	3	4	22	-
14	SS	1124247	4	2	2	7	2	2	3	4	3	3	5	3	29	-
15	GRS	246819	2	4	2	8	2	2	4	3	4	4	7	2	33	-
16	KK	1212058	2	6	4	7	3	3	3	3	3	4	8	3	34	-
17	GC	1212056	3	5	2	7	2	4	3	4	3	3	6	2	31	-
18	RD	1195194	2	3	3	6	3	5	4	5	5	4	7	3	24	-
19	RS	1240972	2	6	2	7	2	2	3	4	2	2	7	2	36	-
20	PM	891731	5	6	2	5	3	3	3	3	4	3	4	3	25	-
21	PL	1229538	2	2	2	6	5	4	4	5	4	4	5	3	28	-
22	VD	1227047	5	2	2	5	4	3	5	4	5	3	4	5	13	-
23	BK	863724	2	4	4	6	3	3	3	2	3	2	7	2	36	-
24	PK	49050	2	5	2	6	2	3	3	3	3	3	7	3	35	-
25	VK	1208512	2	4	2	5	4	4	4	4	6	4	7	4	25	-
26	SL	820410	2	4	2	5	4	3	4	3	4	3	6	4	18	-
27	HK	1154497	5	3	2	4	4	5	3	4	5	3	4	3	16	-
28	RK	1226213	2	5	3	8	3	2	3	2	3	3	7	4	32	-
29	SD	1126343	2	6	3	7	3	2	3	2	3	2	8	2	37	-
30	PK	52283	2	4	2	6	4	3	4	3	3	4	6	3	28	-
31	SK	1199306	2	4	2	6	4	4	5	4	4	5	5	3	19	-
32	RM	1233308	2	5	3	7	5	3	2	3	3	3	6	2	29	-
33	KD	1227056	2	6	3	7	2	2	2	4	3	2	8	4	31	-
34	MK	1186751	2	5	4	6	4	4	4	3	5	4	6	5	34	-
35	Gk	228392	2	5	2	5	5	3	4	3	4	3	5	4	15	-
36	S	863722	2	5	4	8	4	3	2	3	3	4	8	4	32	-
51	LK	165765	6	7	2	4	5	4	3	4	4	5	3	5	17	-
38	R	1233084	6	7	2	4	5	4	4	5	4	5	3	5	17	-
39	SS	658279	5	3	2	4	4	5	5	4	5	4	3	4	14	-
40	SR	854514	4	5	5	6	2	2	3	3	2	3	5	3	36	-
41	MS	428287	4	4	2	5	5	4	6	6	6	5	3	5	12	-
42	S	1228689	6	6	4	6	2	2	2	4	3	3	2	2	30	-

S.no	Name	MRD NO.	GROUP	Age	Sex	Education	Occupation	marital status	Urban/rural	SES	DOI (In years)	B-IPS	DDF	DIF	EOT	Total TAS	TAS GROUP	SELF DISTRACTION	DENIAL
43	SK	1180117	1	57	M	upto metric	farmer	married	rural	LM	18	42	14	23	36	73	3	8	6
44	GK	1214846	1	49	F	PG	professional	married	urban	UM	2	83	7	11	11	29	1	5	2
45	BS	428387	1	56	M	illiterate	farmer	married	rural	UL	22	35	17	27	32	76	3	8	6
46	SK	1228699	1	74	F	illiterate	unemployed	married	rural	UL	30	38	19	27	28	74	3	7	5
47	MRS	1180567	1	61	M	graduate	professional	married	urban	UM	1	67	8	11	16	36	1	3	3
48	NS	622430	1	51	M	upto metric	other	married	rural	LM	9	41	21	28	32	81	3	7	6
49	PS	695940	1	25	M	PG	student	unmarried	urban	UM	1	72	8	10	17	36	1	4	3
50	TS	123664	1	33	M	PG	student	married	urban	UM	4	72	7	12	11	30	1	4	2
1	JK	-	2	51	F	12th	student	unmarried	urban	UM	-	-	10	12	16	38	1	4	4
2	BS	-	2	57	M	graduate	professional	married	urban	UM	-	-	9	13	17	39	1	6	5
3	MS	-	2	27	F	12th	unemployed	married	urban	LM	-	-	15	21	23	59	2	3	4
4	JK	-	2	22	F	12th	student	unmarried	rural	UM	-	-	8	9	12	29	1	4	2
5	HK	-	2	25	F	graduate	student	unmarried	urban	UM	-	-	8	9	12	29	1	3	3
6	N	-	2	33	F	graduate	unemployed	married	rural	LM	-	-	13	18	20	51	1	6	4
7	PK	-	2	45	F	graduate	professional	married	urban	UM	-	-	8	11	12	29	1	5	3
8	KB	-	2	52	M	PG	professional	married	rural	UM	-	-	9	11	15	35	1	7	6
9	MKS	-	2	29	F	graduate	unemployed	married	rural	UL	-	-	14	22	22	58	2	3	2
10	AB	-	2	27	F	12th	unemployed	unmarried	urban	UM	-	-	7	10	13	29	1	3	4
11	S	-	2	31	F	illiterate	unemployed	married	rural	LM	-	-	13	14	17	44	1	4	3
12	JK	-	2	52	M	PG	shopkeeper	married	urban	LM	-	-	10	11	14	35	1	4	2
13	VD	-	2	32	F	upto metric	unemployed	married	urban	UM	-	-	8	10	15	33	1	3	4
14	P	-	2	36	F	12th	skilled worker	married	rural	UL	-	-	15	22	29	66	3	6	5
15	PD	-	2	29	M	upto metric	farmer	married	urban	UM	-	-	8	10	13	31	1	4	2
16	RK	-	2	51	F	12th	skilled worker	married	urban	UM	-	-	9	13	16	39	1	4	3
17	JSS	-	2	54	M	10th	skilled worker	married	rural	LM	-	-	14	22	20	56	2	5	4
18	S	-	2	50	F	10th	unemployed	married	urban	LM	-	-	13	21	24	58	2	6	5
19	AB	-	2	51	M	graduate	student	unmarried	urban	UM	-	-	7	10	12	29	1	3	2
20	S	-	2	26	M	graduate	professional	unmarried	urban	UM	-	-	8	9	13	28	1	4	4
21	NK	-	2	31	F	graduate	unemployed	married	rural	UM	-	-	8	13	16	37	1	3	2
22	N	-	2	29	F	12th	student	unmarried	rural	LM	-	-	7	8	12	27	1	3	3
23	AJ	-	2	59	M	graduate	student	unmarried	urban	UM	-	-	9	10	13	32	1	4	2
24	R	-	2	56	F	upto metric	skilled worker	married	rural	UL	-	-	14	22	24	60	2	7	5
25	N	-	2	49	F	illiterate	unemployed	married	urban	UM	-	-	7	9	14	30	1	4	2
26	M	-	2	42	M	10th	unemployed	married	rural	UM	-	-	7	10	14	31	1	4	4
27	AM	-	2	49	F	upto metric	unemployed	married	urban	U	-	-	8	11	13	32	1	3	2
28	VK	-	2	66	M	graduate	farmer	married	rural	UL	-	-	15	23	26	64	3	7	6
29	P	-	2	52	F	graduate	student	unmarried	rural	UM	-	-	5	6	9	20	1	3	3
30	P	-	2	28	M	12th	skilled worker	unmarried	rural	UL	-	-	10	10	11	31	1	4	4
31	GS	-	2	56	M	PG	professional	married	urban	UM	-	-	7	9	13	28	1	4	2
32	L	-	2	55	F	graduate	unemployed	married	urban	UM	-	-	15	21	25	61	3	7	6
33	N	-	2	53	F	graduate	student	unmarried	rural	LM	-	-	9	10	14	33	1	5	2
34	MW	-	2	53	M	PG	professional	married	urban	UM	-	-	10	13	12	35	1	4	3

S.no	Name	MRD NO.	SUBSTANCE USE	VENTING	SELF BLAME	BEH. DISENGAGE	EMOTIONAL SUPPORT	INSTRUMENTAL SUPPORT	POSITIVE REFRAME	PLANNING	ACCEPTANCE	ACTIVE COPING	RELIGION	HUMOUR	HADS	GHQ-12
43	SK	1180117	5	7	4	6	3	2	3	3	4	3	2	2	32	-
44	GK	1214846	2	6	2	5	5	3	5	3	4	3	8	4	19	-
45	BS	428387	4	7	2	6	2	2	2	3	3	3	2	2	33	-
46	SK	1228699	2	5	2	6	3	2	3	2	3	3	8	2	37	-
47	MRS	1180567	4	6	2	6	5	4	3	4	4	4	3	5	18	-
48	NS	622430	4	5	2	6	2	2	3	2	3	3	5	2	35	-
49	PS	695940	4	6	2	4	2	2	5	4	5	4	3	4	16	-
50	TS	123664	2	6	2	5	5	3	5	3	4	3	8	4	19	-
1	JK	-	2	7	2	5	6	4	5	6	5	5	4	4	16	9
2	BS	-	5	6	3	7	5	3	4	4	3	3	5	4	27	21
3	MS	-	2	4	2	4	3	4	6	5	7	4	4	3	16	8
4	JK	-	2	4	2	4	5	4	7	4	8	6	3	4	17	12
5	HK	-	2	3	2	6	5	4	7	6	7	5	3	3	14	10
6	N	-	2	6	3	5	4	3	4	3	4	3	5	5	24	20
7	PK	-	2	4	2	4	4	4	5	5	7	5	4	3	17	10
8	KB	-	6	7	2	6	5	2	3	4	4	2	4	4	28	23
9	MKS	-	2	4	2	4	4	3	5	4	6	5	4	3	16	8
10	AB	-	2	3	2	3	5	3	7	6	6	6	3	4	11	7
11	S	-	2	3	2	5	4	3	5	4	7	5	4	3	13	6
12	JK	-	5	4	2	3	4	4	6	5	6	4	3	4	17	7
13	VD	-	4	3	2	4	4	2	7	4	6	5	3	4	11	8
14	P	-	2	7	4	6	3	4	3	3	2	3	4	3	29	21
15	PD	-	5	3	2	4	4	2	6	5	6	5	3	5	13	8
16	RK	-	2	3	2	4	3	4	5	6	6	4	4	3	18	11
17	JSS	-	4	3	2	4	5	2	6	5	6	4	3	2	14	9
18	S	-	2	6	3	7	3	3	3	4	3	3	5	4	25	23
19	AB	-	3	3	2	3	5	3	7	4	6	7	3	3	18	9
20	S	-	3	3	2	4	4	3	6	5	6	4	5	4	21	8
21	NK	-	2	4	2	5	3	3	7	4	7	5	4	3	24	10
22	N	-	2	4	2	4	4	3	6	5	7	4	6	3	16	13
23	AJ	-	3	2	2	4	3	2	6	4	7	6	4	2	18	9
24	R	-	2	6	4	6	4	4	2	3	2	2	7	3	32	25
25	N	-	2	4	3	3	5	3	7	5	7	5	5	4	16	7
26	M	-	2	3	2	4	4	2	6	4	6	4	5	4	17	11
27	AM	-	2	3	2	3	3	2	6	4	8	6	3	3	12	7
28	VK	-	5	2	2	6	4	3	3	3	4	3	4	3	33	28
29	P	-	2	4	3	4	3	2	5	6	5	6	3	2	16	13
30	P	-	5	4	3	4	3	2	7	5	8	4	5	4	13	12
31	GS	-	4	3	2	5	6	3	6	4	7	6	2	3	12	9
32	L	-	2	5	2	7	3	3	2	3	3	2	8	3	34	27
33	N	-	2	3	2	5	4	2	6	4	8	5	4	5	13	9
34	MW	-	2	5	2	4	3	2	6	5	7	4	3	2	14	13

S.no	Name	MRD NO.	GROUP	Age	Sex	Education	Occupation	marital status	Urban/rural	SES	DOI (In years)	B-IPS	DDF	DIF	EOT	Total TAS	TAS GROUP	SELF DISTRACTION	DENIAL
35	P	-	2	27	F	12TH	unemployed	married	rural	UM	-	-	12	16	21	49	1	6	4
36	AW	-	2	58	M	12th	skilled worker	married	rural	UL	-	-	13	22	27	62	3	6	4
37	MK	-	2	39	F	illiterate	unemployed	married	rural	UM	-	-	9	10	8	28	1	4	2
38	RK	-	2	53	M	12th	unemployed	married	urban	LM	-	-	10	12	15	37	1	3	4
39	KK	-	2	38	F	PG	professional	married	urban	U	-	-	6	8	12	26	1	5	2
40	SB	-	2	48	M	12th	skilled worker	married	rural	LM	-	-	9	8	11	28	1	4	3
41	RV	-	2	59	M	upto metric	farmer	married	rural	LM	-	-	11	21	26	58	2	6	8
42	MS	-	2	54	M	graduate	student	unmarried	urban	UM	-	-	9	11	11	30	1	3	2
43	GS	-	2	69	M	illiterate	farmer	married	rural	UL	-	-	17	26	31	74	3	7	6
44	S	-	2	48	F	graduate	professional	married	urban	U	-	-	9	16	21	46	1	7	2
45	BD	-	2	57	M	10th	shopkeeper	married	urban	UM	-	-	7	9	11	27	1	3	4
46	KD	-	2	49	F	upto metric	unemployed	married	urban	UM	-	-	8	9	13	30	1	6	5
47	SS	-	2	65	M	PG	professional	married	rural	U	-	-	6	7	11	24	1	3	2
48	R	-	2	57	F	illiterate	unemployed	married	rural	LM	-	-	15	24	27	66	3	5	4
49	DS	-	2	54	M	12th	student	unmarried	urban	UM	-	-	9	12	16	37	1	3	2
50	AD	-	2	58	M	PG	professional	unmarried	urban	U	-	-	5	7	12	24	1	4	3

S.no	Name	MRD NO.	SUBSTANCE USE	VENTING	SELF BLAME	BEH. DISENGAGE	EMOTIONAL SUPPORT	INSTRUMENTAL SUPPORT	POSITIVE REFRAME	PLANNING	ACCEPTANCE	ACTIVE COPING	RELIGION	HUMOUR	HADS	GHQ-12
35	P	-	2	4	2	6	5	3	4	3	3	2	6	4	27	24
36	AW	-	5	3	2	7	3	2	3	3	4	2	3	3	36	29
37	MK	-	2	3	2	4	6	2	6	5	5	4	4	3	16	17
38	RK	-	2	3	2	3	2	3	6	4	8	5	4	4	15	7
39	KK	-	2	4	2	4	2	3	7	6	7	6	3	4	11	12
40	SB	-	4	3	2	5	4	3	6	5	6	4	5	2	14	11
41	RV	-	2	5	4	6	3	3	2	3	2	3	3	2	33	27
42	MS	-	2	5	2	4	5	4	3	4	6	5	5	3	13	12
43	GS	-	4	6	2	7	3	2	3	3	2	3	6	3	34	28
44	S	-	2	6	5	6	5	4	5	3	4	2	7	2	31	25
45	BD	-	2	5	2	4	3	2	6	4	8	5	2	3	12	9
46	KD	-	2	2	4	5	5	4	2	3	5	4	7	3	21	19
47	SS	-	5	5	2	3	2	2	3	4	4	3	2	2	16	12
48	R	-	2	7	3	5	3	3	3	2	4	2	5	3	34	27
49	DS	-	2	3	2	3	6	3	5	5	5	4	4	4	16	13
50	AD	-	2	3	2	5	4	2	7	6	7	5	3	4	14	11

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Date 4/1/2022

The Principal,
DMC, Ludhiana.

Subject: Approval of Plan of Thesis.

This is to inform you that the Faculty of Medical Sciences in its meeting held on 29.10.2021 has approved the plan of thesis of **Tamanna Singh**, a student of your college for **M.Phil. (Clinical Psychology)** along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis
Relationship between illness perception, alexithymia, coping styles and psychological distress in asthma patients.

Supervisor
Dr. Bholeshwar Prasad Mishra
Prof. & Head,
Dept. of Clinical Psychology,
DMCH, Ludhiana.

Co-Supervisor

Dr. Akashdeep Singh
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The student has to submit the four copies of thesis (along with PDF format) , to the Controller of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She must directed to attach a photocopy of this letter with the forwarding letter while submitting thesis to the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic,(if any).

S P Singh

Dr. S P Singh MS(Oph)
Controller of Examinations

Note :

195. If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, Inform undersigned within one month after issue of this letter.

196. The student may submit the thesis as per the schedule already conveyed i.e for May/June examination 30th Nov of the preceding the year of examination and for Nov/Dec examinations 31st May of the year of examination.

RELATIONSHIP BETWEEN ILLNESS PERCEPTION, ALEXITHYMIA, COPING STYLES AND PSYCHOLOGICAL DISTRESS IN ASTHMA PATIENTS

DISSERTATION PROPOSAL

FOR APPROVAL OF SUBJECT OF DISSERTATION TO BE SUBMITTED

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

M. PHIL

IN

CLINICAL PSYCHOLOGY

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES

FARIDKOT

July, 2021

TAMANNA SINGH

DEPARTMENT OF CLINICAL PSYCHOLOGY
DAYANAND MEDICAL COLLEGE AND HOSPITAL
LUDHIANA

ABSTRACT OF PLAN OF DISSERTATION

Title	RELATIONSHIP BETWEEN ILLNESS PERCEPTION, ALEXITHYMIA, COPING STYLES, AND PSYCHOLOGICAL DISTRESS IN ASTHMA PATIENTS.
For the degree of	M Phil Clinical Psychology
Name of the candidate	MS. TAMANNA SINGH
Supervisor	Dr.Bholeshwar Prasad Mishra, Professor & Head, Department of Clinical Psychology, DMCH, Ludhiana
Co-supervisor	Dr. Akashdeep Singh, Professor & Head Department of Chest DMCH, Ludhiana Palak Upadhyay, Assistant Professor, Department of Clinical Psychology, DMCH, Ludhiana
Institution	Dayanand Medical College & Hospital, Ludhiana
University	Baba Farid University of Health Sciences, Faridkot

Introduction: Asthma is a common heterogeneous chronic disease among population of all ages. Psychological factors like anxiety and depression may act as a trigger of asthmatic attack and thus can induce or exacerbate asthmatic symptoms. Asthma patients having negative illness perception will perceive their disease as threatening which can influence their ability to cope with the disease and may lead to poor medication adherence and subsequently disease control. A higher score of asthma patients on alexithymia can be associated with worse asthma control score and poor adherence to asthma treatment. Asthma can also have a negative impact on quality of life of patients but adequate coping strategies may mediate these negative effects.

Aim of Study: 1.To assess Illness Perception in individuals diagnosed with asthma. 2. To assess and compare alexithymia in individuals diagnosed with Asthma and healthy individuals. 3. To assess and compare coping styles in individuals diagnosed with Asthma and healthy individuals. 4. To assess and compare psychological distress in individuals diagnosed with Asthma and healthy individuals. 5. To find the relationship between illness perception, alexithymia, coping styles and psychological distress in individuals diagnosed with asthma.

Materials & methods: Study will be conducted on 50 individual diagnosed and undergoing treatment for Asthma from both In-patient-department and Out-patient department at Dayanand Medical College and Hospital, Ludhiana and 50 healthy individuals (control group). Age ranging between 18-75 years, gender-both males and females, for both individual diagnosed with asthma and healthy individuals. Socio-demographic proforma will be filled containing the basic information of the subject and they will be evaluated on Illness Perception using Brief Illness Perception Questionnaire (Brief-IPQ), Alexithymia using Toronto Alexithymia scale, coping style using Brief-Cope Inventory and Psychological distress using The Hospital Anxiety and Depression Scale (HADS), The General Health Questionnaire - 12 (GHQ - 12) to assess any mental illness in the control group.

Clinical Significance: The study will contribute to plan interventions for asthma patients addressing illness perception, alexithymia, coping styles and psychological distress.

Keywords: Asthma, Alexithymia, Illness Perception, psychological distress, coping styles.

Tamanna

(Signature) Candidate | (Signature) Co-supervisor | (Signature) Co-supervisor | (Signature) Supervisor | (Signature) Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of dissertation titled "**RELATIONSHIP BETWEEN ILLNESS PERCEPTION, ALEXITHYMIA, COPING STYLES AND PSYCHOLOGICAL DISTRESS IN ASTHMA PATIENTS**"exist in the department of Clinical Psychology, DMCH, Ludhiana and will be provided to the candidate. We will see that the data being included in the dissertation is genuine and is collected by the candidate herself under our supervision and guidance.

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APPROVAL PROFORMA
BY RESEARCH & ETHICAL COMMITTEE
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Name of candidate	MS.TAMANNA SINGH
Department	Clinical Psychology
Topic of Dissertation	RELATIONSHIP BETWEEN ILLNESS PERCEPTION, ALEXITHYMIA, COPING STYLES, AND PSYCHOLOGICAL DISTRESS IN ASTHMA PATIENTS
Likely date of appearing in PG examination	May-June 2022
Date of enrollment	26.10.2020
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	Dr. Gagandeep Singh (Secretary, Ethics Committee Professor & Head, Neurology)

Approved: Yes / No

Dr. Sandeep Puri
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Approved: Yes / ~~No~~

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Ethics Committee

BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT

PROFORMA FOR REGISTRATION OF SUBJECT FOR DISSERTATION

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2	NAME OF THE INSTITUTE	DAYANAND MEDICAL COLLEGE AND HOSPITAL, LUDHIANA
3	COURSE OF STUDY AND SUBJECT	M PHIL CLINICAL PSYCHOLOGY
4	DATE OF ADMISSION OF COURSE	26.10.2020
5	TITLE OF THE TOPIC	RELATIONSHIP BETWEEN ILLNESS PERCEPTION, ALEXITHYMIA, COPING STYLES, AND PSYCHOLOGICAL DISTRESS IN ASTHMA PATIENTS.

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

Asthma is a heterogeneous chronic disease characterized by recurrent attacks of breathlessness and wheezing and is associated with gene-environment interactions1. It is defined as "a chronic respiratory disease of unclear etiology, characterized by reversible airway obstruction and heightened airway irritability usually accompanied by inflammation of tissues of the airways, mucus congestion, or constriction of airway smooth muscles." Asthma presents a significant global health burden as more than 235 million people worldwide are affected by asthma, and over 380,000 deaths were attributed to asthma over a 12-month period.

Psychological factors may predispose to asthma and may also act as a trigger of asthmatic attack. Psychological factors like stress, anxiety, depression, panic disorder can induce or exacerbate asthmatic symptoms. The prevalence of depression in asthma ranges from 1% to 45%. This wide range in the reported rates is problematic but most authors suggest an increased prevalence of depression in patients with asthma.

Various studies on psychological distress have concluded that individuals with asthma are more likely to be depressed than those without asthma. Mrazek.et.al 1992[1] found that more severe asthma was associated with increased depressive symptoms. Depression occurring in Asthma is associated with poor asthma control, more acute attacks, more hospitalizations, higher health care costs.

Perception of illness is a patient's cognitive appraisal and personal understanding of a medical condition and its potential consequences (Broadbent et al., 2015). [2] Illness perception focuses on how an individual experiences and mentally frames living with a disease (Weinman and Petrie, 1997).[3] This may include both positive and negative illness beliefs that can influence the ability to cope with the disease and to perceive it as manageable or threatening (Bonsaksen et al., 2015).[4] Illness perceptions (cognitive and emotional representations of the illness) and medication beliefs have been found

to be important determinants of medication adherence, and subsequently disease control and Quality of Life in adults with asthma. A study by Achstetter LI.et.al 2019 [5] shows illness representations predict changes in asthma control. The study finds out that the illness representation dimensions Personal control, Consequences, Coherence, and Emotional representation predicted the change in asthma control.

Alexithymia is a personality dimension, characterized by different cognitive and emotional features, such as difficulty in describing and identifying emotions, problems communicating feelings, and limited imagination. A study conducted by *M.Turki.et.al 2017*[6] shows that alexithymia is commonly observed in patients with psychosomatic symptoms. Study shows that high prevalence of alexithymia in patients with asthma have negative impact in asthma control. Psychological support aiming specifically alexithymic dimension in these patients is indispensable. A study done by *Aouadi, S.et.al 2015* [7] shows that a higher alexithymia score in asthma patients is associated with decreased pulmonary function, worse asthma control score, more emergency room visit, irregular follow-up and poor adherence to asthma treatment. All the three factors (F1, F2, and F3) of alexithymia were significantly associated to a worse quality of life score in asthma patients. Coping is defined as a set of behavioural and cognitive responses designed to manage the stressors of a situation. Although asthma severity has a negative impact on Quality Of Life of patients with asthma, adequate coping strategies may mediate these negative effects. A study by Van De Ven.et.al 2007[8] shows that the coping strategies like *restricted lifestyle* and *worrying about asthma* were associated with poorer overall Quality Of Life. The use of the coping strategies *restricted lifestyle*, *positive reappraisal*, and *information seeking* was related to increased scores on the positive quality Of Life domain, whereas *hiding asthma* was related to lower scores on the positive quality Of Life domain.

Thus, the aim of the study was to explore illness perception, alexithymia, coping styles and psychological distress in asthma patients.

6.2 REVIEW OF LITERATURE

Depression and anxiety disorders are the most common psychiatric disorders, occur in higher rates in people with asthma than in the general population. Given the high rates of depression and anxiety in people with asthma, the detection and management of psychiatric symptoms should be an integral component of medical care for people with asthma, perhaps children and youth in particular. Pharmacological and non-pharmacological treatments for depression may translate into better control of asthma, but trials are needed to determine the optimal approach to managing depression and anxiety in people with asthma (Van Lieshout.et.al 2012). [9]

A study conducted by Krauskopf KA.et.al 2013 [10] shows individual with depressive symptoms were more likely to report poor asthma control , worse Asthma qualify of life questionnaire scores, and higher rates of inpatient asthma-related visits. Those with depressive symptoms also reported lower medication adherence. In this cohort of elderly inner-city participants, depressive symptoms were associated with poorer asthma control and quality of life, as well as with lower rates of adherence to controller medications. Future work exploring possible mediators, including adherence, might elucidate the relationship between depression and poorer asthma outcomes in this population.

In the study conducted by *Ciprandi G.et.al 2015* [11] shows that 97 patients (36.9%) had anxiety, and 29 (11%) had depression. Of these patients, 71 had combined anxiety and depression. The study also shows that Anxiety and depression were associated with poor asthma control. Anxiety and depression were associated with lower Asthma Control Test scores. The scores on the anxiety and depression subscales of Hospital Anxiety and Depression Scales were moderately related. The present real-life study indicates that anxiety and depression are common and relevant comorbidities in asthmatic outpatients and are associated with uncontrolled asthma and lower Asthma Control Test scores.

Illness perceptions are cognitive models that people have about symptoms, illnesses, medical conditions and health threats (Benyamini, 2011). Patients construct them to make sense of their symptoms and medical conditions and to cope with uncertainty. The major components of illness perception include how the illness was caused, how long it will last, what the consequences of the illness are for the patient's life, the symptoms of the illness and how the condition is controlled or cured. It is believed that the way in which patients perceive their illness is a key factor in the type of psychological reaction they have to the illness, and subsequent behaviour and attitudes towards illness (Weinman and Petrie, 1997).

In the study conducted by Kaptein AA.et.al 2008 [12] found meaningful associations between asthma patients' views on the illness and its treatment and non-adherence. As per this study, many asthma patients hold inaccurate perceptions of medication (for example, the belief that corticosteroids are dangerous to health and so should be avoided) that are important to change as this targets both illness and treatment perceptions.

A study conducted by Hagger and Orbell shows that perceptions of strong illness identity were found to be significantly and positively related to the use of coping strategies based on avoidance and emotion expression.

Alexithymia refers to difficulties in verbal expression of emotions, commonly observed in patients with psychosomatic symptoms. In this context, asthma is described as one of psychosomatic diseases.

In a study conducted by *Baiardini I.et.al 2011* [13] shows that Alexithymics had significantly lower Asthma Control Test scores when compared with non-alexithymics. Alexithymics had a worse quality of life and, concerning illness perception, they ascribed to respiratory allergy symptoms that are not strictly disease related and referred to asthma and rhinitis more serious negative consequences and emotional representations. Moreover, they had lower illness coherence and lived their disease as a cyclical rather than a chronic disorder. As

regards stress, alexithymics reported less energy, higher levels of tension, depression, confusion, and inertia. This study also shows that Alexithymia is present in a relevant percentage of subjects and, as it can modulate illness perception, quality of life, and stress, it should be considered in disease management.

According to the study conducted by *Serrano J.et.al 2006* [14] which shows that failure to perceive dyspnoea could lead alexithymic asthmatics to underestimate the severity of an asthma exacerbation, and thereby increase the risk of developing a fatal or *near-fatal asthma* (NFA) attack. This study also shows that there was a higher proportion of alexithymia in the NFA group than in the non-NFA group. Patients with NFA and alexithymia were older than the rest of the NFA group, and had a lower level of education, a higher level of psychiatric morbidity, a higher proportion of severe persistent asthma and a greater number of prior very severe asthma exacerbations. The results show that alexithymia is more frequent in near-fatal asthma patients compared to the rest of asthmatics and is associated with recurrent very severe asthma exacerbations.

A study was conducted by Larsen, et.al 2017[15] to assess the frequency of alexithymia and its relationship with self-management and illness perception in the context of psoriasis. The study found that alexithymic patients scored significantly worse in all health education impact questionnaire domains and reported worse illness perception. This study shows that alexithymia indicates inferior self-management and reaffirms the associations with illness perception.

A study conducted by *Amore M.et.al 2013* [16] shows that the worse alexithymia was associated with poorer pulmonary function and disease control. Bronchial Asthma patients with higher alexithymia, worse pulmonary function and asthma control also more frequently used maladaptive coping strategies. Furthermore, despite the finding that patients with different degrees of asthma control and pulmonary function did not differ for depression and anxiety, the severity of alexithymia correlated positively with depression and anxiety. The results support the view that more severe alexithymia may interfere

with the perception of asthma symptoms as well as with the selection of behavioral coping strategies to deal with the illness and other stressful life events. Bronchial asthma patients with more severe alexithymia are less able to carry out adaptive coping strategies and this may lead to worse disease control and suboptimal pulmonary function, and when facing stressful life events they may develop anxiety and depressive symptoms. Hence, alexithymia and the coping style may be a key mediator in the influence of psychopathology on Bronchial Asthma patients, and thereby plays an important role in the management of the disease, influencing both clinical and functional outcomes.

A study conducted by Chugg K.et.al 2009 [17] indicated that higher alexithymia scores were associated with lower asthma control in patients with moderate to severe asthma, even while controlling for psychological distress. This study suggests that patients with higher alexithymia scores and therefore reduced perception of their feelings were likely to experience asthma symptoms more frequently. High alexithymia scores are associated with poorer (self-reported) adherence, which could be expected to contribute to poorer control of asthma. The finding shows that alexithymia is associated with blunted perception of asthma symptoms, whereby poorer perception of symptoms may affect motivation to maintain the medication regimen.

Coping is defined as a set of behavioural and cognitive responses designed to manage the stressors of a situation. Although asthma severity has a negative impact on Quality Of Life of patients with asthma, adequate coping strategies may mediate these negative effects.

A study on the role of coping resources and coping style in quality of life of patients with asthma or COPD conducted by *Hesselink.et.al 2004* [18] shows that a more emotional coping style was independently associated with poor health related Quality of Life in both asthma and COPD patients. Furthermore, in asthma patients, less self-efficacy feelings, less mastery feelings, a more avoidant coping style and poor

pulmonary function were independently associated with poor Health Related Quality of Life. In COPD patients, a more rational coping style was independently associated with poor health related quality of life. Our findings suggest that psychosocial coping resources and coping style are independently associated with health related quality of life in patients with asthma or COPD. Further research should explore the possibilities of intervening on these factors, aiming to improve health related quality of life in patients with asthma or COPD.

6.3 AIMS AND OBJECTIVES OF THE STUDY

- To assess Illness Perception in individuals diagnosed with asthma.
- To assess and compare alexithymia in individuals diagnosed with Asthma and healthy individuals.
- To assess and compare coping styles in individuals diagnosed with Asthma and healthy individuals.
- To assess and compare psychological distress in individuals diagnosed with Asthma and healthy individuals.
- To find the relationship between illness perception, alexithymia, coping styles and psychological distress in individuals diagnosed with asthma.

7. MATERIALS AND METHODS

7.1 SOURCE OF DATA

Study will be conducted on 50 individual diagnosed and undergoing treatment for Asthma from both In-patient-department and Out-patient department at Dayanand Medical College and Hospital, Ludhiana and 50 healthy individuals (control group).

7.2 METHOD OF COLLECTION OF DATA

Design: Cross-sectional study.

Sample size: 50 individuals diagnosed with asthma and 50 healthy control group.

Sample design: Purposive sampling design will be used. The respondents who meet the inclusion criteria will be selected for the study.

INCLUSION CRITERIA (study group)

- Individual diagnosed with Asthma.
- Undergoing Pharmacological treatment.
- Age group between 18 to 75 years.
- Gender: Both males and females/Either gender.
- Individuals willing to give informed consent.

EXCLUSION CRITERIA (study group)

- Individuals with any psychiatric illness.
- Diagnosed with any other comorbid terminal illness.
- Individual not willing to give informed consent.

INCLUSION CRITERIA (control group)

- Individuals with no history of any psychiatric illness.
- Individuals with no history of any diagnosed significant medical illness.
- Age group between 18 to 75years.
- Gender: Both males and females/Either gender
- Individual willing to give informed consent.

EXCLUSION CRITERIA (control group)

- Individual with any Psychiatric illness.
- Individual with any other chronic illness.
- Individual not willing to give informed consent.

METHODOLOGY

The study will be conducted on 50 individual with Asthma, admitted in In-patient department and visiting Out-patients department at Dayanand Medical College and Hospital, Ludhiana and 50 healthy individual as control group. Age ranging between 18-75 years, of either gender, for both individual diagnosed with asthma and healthy individuals.

Socio-demographic proforma will be filled containing the basic information of the subject and they will be evaluated on Illness Perception using Brief Illness Perception Questionnaire (Brief-IPQ), Alexithymia using Toronto Alexithymia scale, coping style using Brief-Cope Inventory and Psychological distress using The Hospital Anxiety and Depression Scale (HADS), The General Health Questionnaire - 12 (GHQ - 12) to assess any mental illness in the control group.

TOOLS:

1. Socio-demographic proforma.
2. Brief-Illness-perception Scale.
3. Toronto Alexithymia scale.
4. Brief-Cope Inventory.
5. The Hospital Anxiety and Depression Scale (HADS).
6. The General Health Questionnaire - 12 (GHQ - 12).

1. **The Brief Illness Perception Questionnaire (Brief** IPQ):

The Brief Illness Perception Questionnaire (Brief IPQ) is a 9-item questionnaire designed to rapidly assess cognitive and emotional representations of illness (Broadbent et al 2006) [19] The Brief IPQ uses a single-item scale approach to assess perception on a 0–10 response scale. The Brief IPQ comprises 5 items on cognitive representation of illness perception: consequences, timeline, personal control, treatment control, and identity. There are 2 items on emotional representation: concern and emotions. One item is on illness comprehensibility. The last item is on perceived cause of illness. Test-retest reliability (Pearson correlations 0.24–0.73).

2. **The Toronto Alexithymia Scale**:

The Toronto Alexithymia Scale (TAS) was developed by Bagby et al. (1994) [20] to measure alexithymia or difficulty in experiencing, identifying, describing and verbally communicating one's feelings to others. The TAS is a self- report scale that is comprised of 20-items. Items are rated using a 5-point Likert scale whereby 1 = strongly disagree and 5 = strongly agree. The TAS-20 has 3 subscales:

- Difficulty Describing Feelings subscale is used to measure difficulty describing emotions.
- Difficulty Identifying Feeling subscale is used to measure difficulty identifying emotions.
- Externally-Oriented Thinking subscale is used to measure the tendency of individuals to focus their attention externally. The Cronbach's α coefficient for the three factors ranged from 0.61 (DDF) to 0.85 (DIF).

3. **Brief-cope:**

The Brief-Cope was developed by Carver et al., 1989. [21] It is developed as a short version of the original 60-item COPE scale. The Brief-COPE is a 28 item self-report questionnaire designed to measure effective and ineffective ways to cope with a stressful life event. The scale can determine someone's primary coping styles as either Approach Coping, or Avoidant Coping. It has following subscales are reported: Self-distraction, Active coping, Denial, Substance use, Use of emotional support, Use of instrumental support, Behavioral disengagement, Venting, Positive reframing, Planning, Humor, Acceptance, Religion, & Self-blame. Internal consistencies ranged from 0.25 to 1.00. Intra-class Correlation Coefficient (ICC) ranged from 0.05 to 1.00.

4. **The Hospital Anxiety and Depression Scale (HADS):**

The Hospital Anxiety and Depression Scale (HADS) was devised 30 years ago by Zigmond & Snaith.et.al [22] to measure anxiety and depression in a general medical population of patients. It has become a popular tool, for clinical practice and research. Cronbach's alpha

coefficient (to test reliability) has been found to be 0.78 for the HADS anxiety sub-scale and 0.86 for the HADS depression sub-scale.

5. **The General Health Questionnaire - 12 (GHQ - 12)** developed by Goldberg.et.al 1977[23] It will be administered to the healthy control group to detect individuals who are at a risk of developing psychiatric disorders. It has been divided into four subscales: somatic symptoms, anxiety/insomnia, social dysfunction and severe depression. The Cronbach's alpha of the GHQ-12 is 0.9.

OUTCOME

This study will assist in evaluating the association between illness perception, alexithymia and coping styles in asthma patients. It would help us to analyze the impact of illness perception on psychological distress and worsening of their symptoms. This study will help us to assess if high scores on alexithymia will have an impact on self-reported depressive and anxiety symptoms. It will also assist us in finding out most prevalent coping styles used by asthma patients. This study will contribute in planning intervention for managing psychological distress in the same population. The early detection of psychological symptoms will help to prevent worsening of their symptoms so that their quality of life is not compromised.

STATISTICAL ANALYSIS

Data will be described in terms of range; mean ± standard deviation (±SD), median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. Comparison of quantitative variables between the study groups will be done using Student t-test and Mann Whitney U test for independent samples for parametric and non-parametric data respectively. For comparing categorical data, Chi square ($\chi 2$) test will be performed and exact test was used when the expected frequency is less than 5. A probability value (p value) less than 0.05 will be considered statistically significant. All statistical calculations will be done using (Statistical Package for the Social Science) SPSS 21version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows.

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEFLY.

NO

HAS ETHICAL CLEARENCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Yes

8. LIST OF REFERENCES

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SOCIO-DEMOGRAPHIC PROFORMA

S.NO: - **Date:**

1. NAME:

2. AGE:

3. SEX: - Male/ Female

4. MRD.NO: -

5. Education-
a) Illiterate b) Up to Matric
c) 10th d) 12th e) Graduate f) Post graduate

6. Occupation-
a) Farmer/Clerical/Shopkeeper b) Semi-skilled/skilled worker
c) Unemployed d) Other
e) Professional
f) Student

7. Marital Status: Married/unmarried

8. Address- a) Urban b) Rural

9. Contact no.-

10. Family Type- a) Nuclear b) Joint

11. Education of the Head of family

A) Professional degree
B) Graduate or post graduate
C) Intermediate or post high school diploma
D) High school certificate
E) Middle school certificate
F) Primary school certificate
G) Illiterate

Signature of Candidate **Signature of Supervisor**

12. Occupation of the head of family

A) Professional
B) Semi- professional
C) Clerical, shop owner/farm
D) Semi-skilled worker
E) Unskilled worker
F) Unemployed

13. Monthly income of the family

A) >52,734
B) 26,335-52,733
C) 19,759-26,354
D) 13,161- 19,758
E) 7,887-13,160
F) 2,641-7,886
G) <2,640

14. Socio economic status
A) Upper
B) Upper middle
C) Lower middle
D) Upper lower
E) Lower

15. Diagnosis:

16. Duration of illness:

17. Medication Details:

18. Any Psychiatric Illness:

Signature of Candidate

Signature of Supervisor

19. SCALES:

1. Brief Illness Perception Questionnaire

2. Toronto Alexithymia Scale

Difficulty describing feelings sub-scale-

Difficulty identifying feelings sub-scale-

Externally-oriented thinking sub-scale-

3. Brief Cope:

Self-distraction score-

Active coping score-

Denial score-

Substance use score-

Use of emotional support-

Use of instrumental support-

Behaviour disengagement score-

Venting score-

Positive reframing score-

Planning score-

Humour score-

Acceptance score-

Religion score-

Self-blame-

4. The Hospital Anxiety and Depression (HADS)

5. General Health Questionnaire-12 (GHQ-12)

Signature of Candidate **Signature of Supervisor**

Hospital Anxiety and Depression Scale (HADS)

I feel tense or 'wound up'

3 Most of the time

2 A lot of the time

1 From time to time, occasionally

0 Not at all 0

I still enjoy the things I used to enjoy:

0 Definitely as much

1 Not quite so much

2 Only a little

3 Hardly at all

I get a sort of frightened feeling as if something awful is about to happen:

3 Very definitely and quite badly

2 Yes, but not too badly

1 A little, but it doesn't worry me

0 Not at all

I can laugh and see the funny side of things:

0 As much as I always could

1 Not quite so much now

2 Definitely not so much now

3 Not at all

Worrying thoughts go through my mind:

3 A great deal of the time

2 A lot of the time

1 From time to time, but not too often

0 Only occasionally

I feel cheerful:

3 Not at all

2 Not often

1 Sometimes

0 Most of the time

I can sit at ease and feel relaxed:

0 Definitely

1 Usually

2 Not Often

3 Not at all

I feel as if I am slowed down:

3 Nearly

2 all the time

1 Very often Sometimes

0 Not at all

I get a sort of frightened feeling like 'butterflies' in the stomach:

0 Not at all

1 Occasionally

2 Quite Often

3 Very Often

I have lost interest in my appearance:

3 Definitely

2 I don't take as much care as I should

1 I may not take quite as much care

0 I take just as much care as ever

I feel restless as I have to be on the move:

3 Very much indeed

2 Quite a lot

1 Not very much

0 Not at all

I look forward with enjoyment to things:

0 As much as I ever did

1 Rather less than I used to

2 Definitely less than I used to

3 Hardly at all

I get sudden feelings of panic:

3 Very often Indeed

2 Quite often

1 Not very often

0 Not at all

I can enjoy a good book or radio or TV program:

0 Often

1 Sometimes

2 Not often

3 Very seldom

Brief COPE

SCORE 1 = I haven't been doing this at all 2 = I've been doing this a little bit 3 = I've been doing this a medium amount 4 = I've been doing this a lot

1. I've been turning to work or other activities to take my mind off things.
2. I've been concentrating my efforts on doing something about the situation I'm in.
3. I've been saying to myself "this isn't real.".
4. I've been using alcohol or other drugs to make myself feel better.
5. I've been getting emotional support from others.
6. I've been giving up trying to deal with it.
7. I've been taking action to try to make the situation better.
8. I've been refusing to believe that it has happened.
9. I've been saying things to let my unpleasant feelings escape.
10. I've been getting help and advice from other people.
11. I've been using alcohol or other drugs to help me get through it.
12. I've been trying to see it in a different light, to make it seem more positive.
13. I've been criticizing myself.
14. I've been trying to come up with a strategy about what to do.
15. I've been getting comfort and understanding from someone.
16. I've been giving up the attempt to cope.
17. I've been looking for something good in what is happening.
18. I've been making jokes about it.
19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
20. I've been accepting the reality of the fact that it has happened.
21. I've been expressing my negative feelings.
22. I've been trying to find comfort in my religion or spiritual beliefs.
23. I've been trying to get advice or help from other people about what to do.
24. I've been learning to live with it.
25. I've been thinking hard about what steps to take.
26. I've been blaming myself for things that happened.
27. I've been praying or meditating.
28. I've been making fun of the situation.

Toronto Alexithymia Scale (TAS-20)

Please indicate the extent to which you agree or disagree with each of the following statements.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

1. I am often confused about what emotion I am feeling.
2. It is difficult for me to find the right words for my feelings.
3. I have physical sensations that even doctors don't understand.
4. I am able to describe my feelings easily.
5. I prefer to analyze problems rather than just describe them.
6. When I am upset, I don't know if I am sad, frightened, or angry.
7. I am often puzzled by sensations in my body.
8. I prefer to just let things happen rather than to understand why they turned out that way.
9. I have feelings that I can't quite identify.
10. Being in touch with emotions is essential.
11. I find it hard to describe how I feel about people.
12. People tell me to describe my feelings more.
13. I don't know what's going on inside me.
14. I often don't know why am angry.
15. I prefer talking to people about their daily activities rather than their feelings.
16. I prefer to watch "light" entertainment shows rather than psychological dramas.
17. It is difficult for me to reveal my innermost feelings, even to close friends.
18. I can feel close to someone, even in moments of silence.
19. I find examination of my feelings useful in solving personal problems.
20. Looking for hidden meanings in movies or plays distracts from their enjoyment.

General Health Questionnaire -12 (GHQ-12)

We want to know how your health has been in general over the last few weeks. Please read the questions below and each of the four possible answers. Circle the response that best applies to you. Thank you for answering all the questions.

Have you recently:

1. Been able to concentrate on what you're doing?
   Better than usual (0) | same as usual (1) | less than usual (2) | much less than usual (3)
2. Lost much sleep over worry?
   Not at all (0) | no more than usual (1) | rather more than usual (2) | much more than usual (3)
3. Felt that you are playing a useful part in things?
   More so than usual (0) | same as usual (1) | less so than usual (2) | much less than usual (3)
4. Felt capable of making decisions about things?
   More so than usual (0) | same as usual (1) | less than usual (2) | much less than usual (3)
5. Felt constantly under strain?
   Not at all (0) | no more than usual (1) | rather more than usual (2) | much more than usual (3)
6. Felt you couldn't overcome your difficulties?
   Not at all (0) | no more than usual (1) | rather more than usual (2) | much more than usual (3)
7. Been able to enjoy your normal day to day activities?
   More so than usual (0) | same as usual (1) | less so than usual (2) | much less than usual (3)
8. Been able to face up to your problems?
   More so than usual (0) | same as usual (1) | less than usual (2) | much less than usual (3)
9. Been feeling unhappy or depressed?
   Not at all (0) | no more than usual (1) | rather more than usual (2) | much more than usual (3)
10. Been losing confidence in yourself?
    Not at all (0) | no more than usual (1) | rather more than usual (2) | much more than usual (3)
11. Been thinking of yourself as a worthless person?
    Not at all (0) | no more than usual (1) | rather more than usual (2) | much more than usual (3)
12. Been feeling reasonably happy, all things considered?
    More so than usual (0) | same as usual (1) | less so than usual (2) | much less than usual (3)

Brief Illness Perception Scale

How much does your illness affect your life ?

0. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

(No affect at all). (Severely affects my life)

How long do you think your illness will continue ?

0. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

(A very short time). (Forever)

How much control do you feel you have over your illness?

0. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

(Absolutely no control). (Extreme amount of control)

How much do you think your treatment can help your illness?

0. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

(Not at all). (Extremely helpful)

How much do you experience symptoms from your illness?

0. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

(No symptoms At all). (Many severe symptoms)

How concerned are you about your illness?

0. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

(Not at all concerned). (Extreme concerned)

How well do you understand your illness?

0. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

(Don't understand at all). (Understand very clearly)

How much does your illness affect you emotionally? (eg. Does it make you angry, scared, upset or depressed?)

0. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

(Not at all affected emotionally). (Extremely affected emotionally)

INFORMED PATIENT CONSENT

Date: _____

I.....D/o, W/o, S/o..... .....am willing to participate in the study **"RELATIONSHIP BETWEEN ILLNESS PERCEPTION, ALEXITHYMIA, COPING STYLES AND PSYCHOLOGICAL DISTRESS IN ASTHMA PATIENTS"** The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason.

....

Signature of the Witness Signature of the patient

Name:

Signature of Candidate **Signature of Supervisor**

मरीज अनुमति फार्म

तिथि_____

मैं_____ पत्नी/पुत्र/ पुत्री_____

निवासी_____

इस शोधकार्य "**RELATIONSHIP BETWEEN ILLNESS PERCEPTION, ALEXITHYMIA, COPING STYLES AND PSYCHOLOGICAL DISTRESS IN ASTHMA PATIENTS**"में भाग लेने के लिए सहमत हूँ। मैं इस शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ की यह स्वीकृति देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं श्य धकार्य का उद्देदिया गया और न ही दबाव डाला गया है। मुझे इस शो स है की यह विज्ञान और कर दिया गया है और मुझे यह विश्वास्पष्ट मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ मे यह जोखिम बहुत मामुली है।

मैं किसी भी समय अपनी मैं इस शोधकार्य में भाग लेने के सम्बन्ध कर सकताअस्वीकृति व्यक्त/ करने का सकती हूँ और मेरे अस्वीकृति व्यक्त मेरे इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____ _____

गवाह के हस्ताक्षर रोगी के हस्ताक्षर/ अंगूठे का निशान

नाम: नाम:

_____

अन्वेषक केहस्ताक्षर

_____

विद्यार्थी के हस्ताक्षर

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ_____

ਮੈ_____ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ_____

ਵਾਸੀ_____

"RELATIONSHIP BETWEEN ILLNESS PERCEPTION, ALEXITHYMIA, COPING STYLES AND PSYCHOLOGICAL DISTRESS IN ASTHMA PATIENTS" ਤੇ ਚਲ ਰਹੀ ਖੋਜ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ ।ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ ।ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭ-ਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ ।ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ ।ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ – ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈ ਸਕਦਾ ਹਾਂ/ ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

_____ _____

ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ_____ _____ਮਿਤੀ

ਪਤਾ _____ ਪਤਾ_____

_____

ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

_____

ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ